CCD-V700E
RMT-501

SONY
SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

SUPPLEMENT-1

- **DIAGRAMS**
- **ADUSTMENT**

File this supplement-1 with the service manual.

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The colour reproduction standard frame is contained after the adjustment elements location of camera adjustment parts.

1-10. SERVO, SYSTEM CONTROL SYSTEM TERMINAL FUNCTION SS-133 BOARD IC001 (CXP-80116)

PIN No.	Signal Name	I/O	Function	Connection
1	SEL2	O	ATF REF PILOT signal frequency control ATF REF PILOT f_1 f_2 f_3 f_4 SEL 1 H L H L SEL 2 H H L L	ATF IC CXA1204Q
2	SEL1	O		
3	DS ON	O	Data Screen ON/OFF control. Data Screen On and Data Screen key are selected with "H"	VIDEO block
4	VI SWP	O	RF SWP using for Vidoe system Normally, same as RF SWP. When using 'CH only "H" 3Head is used.	VIDEO block
5	DRM ACC	O	DRUM motor acceleration signal Acceleration is selected with "H"	To Drum motor driver CXA8006M
6	DRM BLK	O	DRUM motor brake signal Brake is selected with "H"	To Drum motor driver CXA8006M
7	JOG	O	Normal/JOG mode recognition signal JOG is selected with "H"	R/P Amp VIDEO block
8	FE RA	—	Not used	——
9	FE RS	—		
10	H CHG	O	2CH or 'CH select signal 'CH is selected with "H" Only 3Head is used	VIDEO system R/P Amp
11	SYSTEM SYNC	O	Internal bus communication synchronizing signal (V synchronization)	Mode controller
12	SP/$\overline{LP}$	O	SP/LP mode recognition signal SP mode is selected with "H"	R/P Amp VIDEO/AUDIO block
13	$\overline{NOR}$/Hi8	O	Hi8/NOR mode output	VIDEO block
14	VA PB MODE	O	VIDEO/AUDIO system REC/PB mode select PB mode is selected with "H"	VIDEO/AUDIO block
15	UNLOAD	O	Loading motor control signal OFF LOADING UNLOADING BRAKE LOAD L H L H UNLOAD L L H H	TO loading motor
16	LOAD	O		
17	CAP ON2	—	Not used	——
18	AF REC	—	Not used	——
19	ME/$\overline{MP}$	I	ME/MP tape recognition input ME tape is selected with "H"	To CC board
20	MP HG	I	MP HG tape recognition input MPHG is selected with "L"	To CC board
21	REC PROOF	I	REC PROOF recognition input REC PROOF is selected with "L"	To CC board
22	MODE SW2	I	Mechanical position input	To CC board
23	MODE SW1	I		
24	MODE SW0	I		
25	$\overline{CC\ DOWN}$	I	Cassette IN switch input Cassette IN is selected with "L"	To CC board
26	DRM ON	O	Drum motor drive control Motor Drive is selected with "H"	To Drum motor driver CXA8006M
27	T/E LED	O	LED for tape top end sensor drive control LED Flashing is selected with "H"	To CC board
28	$\overline{REEL\ LED}$	O	LED for reel sensor drive control LED Flashing is selected with "L"	To CC board

PIN No.	Signal Name	I/O	Function	Connection
29	POWER SAVE	O	Marker block POWER SAVE control signal	——
30	$\overline{\text{EDIT}}$	O	EDIT ON/OFF control EDIT is selected with "L"and interlocked with EDIT key.	To VIDEO block
31	SS GND	—	—	——
32	$\overline{\text{SYSTEM RESET}}$	I	Control by mode controller with RESET terminal of this microcomputer RESET is selected "L"	Mode controller and others
33	SS GND	—	—	——
34	16M OUT	O	Crystal connecting terminal for system clock oscillation (16 MHz)	X'tal (X001)
35	16M IN	I		
36	$\overline{\text{COSMO CS}}$	I	Select signal of this microcomputer from internal bus communication mode controller Selected with "L"	Mode controller
37	DATA TO SLVE	I	Serial data input terminal	Mode controller
38	DATA TO MSTR	O	Serial data output terminal	Mode controller
39	$\overline{\text{SCK}}$	I	Serial clock input terminal	Mode controller
40	PCM ACT	—	Not used	——
41	Hi8 DET	I	Hi8 with Hi8/NOR distinction input "H" when playing back	IC204 (CXA2017)
42	S IN	I	Distinction input of the S terminal connection	VIDEO block
43	$\overline{\text{MONO}}$/ST DET	I	AFM monaural/stereo recognition input Stereo is selected "H" (Only stereo correspondence model)	To AUDIO block
44	TOP SENS	I	Tape top end sensor input TOP is selected with "H"	To CC board
45	END SENS	I	END is selected with "H"	
46	T REEL FG	I	Reel sensor input Take up side	To CC board
47	S REEL FG	I	Reel sensor input Supply side	
48	BATT SENS	I	Battery input voltage sense	——
49	DEW SENS	I	DEW SENSOR input	DEW SENSOR, To CC board
50	THERMISTOR	I	THERMISTOR input (This model : fixed value)	
51	ATF ERROR	I	ATF error (ATF LOCK error) input, A/D input terminal	IC105 (CXA1204Q)⑫
52	SS GND	—	—	——
53 54	SS 4.9V		Power source supply terminal	
55	DRM PG	I	DRUM PG input, FRC (high precision timer) capture input terminal	IC502 ⑨
56	$\overline{\text{HiFi}}$/WIND	I	Not used	——
57	CLOG	I	Clog detection signal input. CLOG is selected with "H"	Q265 ©
58	COMP SYNC	I	Composite trunk (composite synchronizing signal) input. (built-in V SYNC separator)	To V IDEO block
59	SP/$\overline{\text{LP}}$ DET	I	SP/LP recognition signal input	Q262 ©
60	DRM PG	—	—	——
61	DRM FG	I	DRUM FG input terminal, FRC capture input terminal	IC004 ⑩ Sense Amplifier

PIN No.	Signal Name	I/O	Function	Connection
62	CAP FG	I	CAPSTAN FG input terminal, FRC capture input terminal	IC502⑫ Sense amplifier
63	MONO/$\overline{ST}$	O	Input-output selecting switch control signal	VIDEO block
64	SYNC DET	I	With/Without VIDEO signal recognition signal input	To VIDEO block
65	CAP D/A	O	DA gate pulse output terminal for CAP ERROR output, Servo exclusive output terminal (DA mode)	To capstan lowpass filter
66	DRM D/A	O	DA gate pulse output terminal for DRUM ERROR output, Servo exclusive output terminal (DA mode)	To drum lowpass filter
67	CAP PWM	O	PWM output terminal for CAP ERROR output, Servo excluseive output terminal (PWM mode)	Capstan driver IC503
68	DRM RVS	O	DRUM rotating direction control signal RVS is selected with "H" FWD is selected with "L"	IC006 ③
69	CAP FG	I	External event input terminal to CAP FG input terminal exclusive counter for TAPE COUNTER drive	IC004⑫ sense amplifier
70	MIC JACK MONO/$\overline{ST}$	I	External MIC Monaural/stereo recognition signal. Monaural is selected with "H"	To AUDIO block
71 72	SS 4.9V			
73	SS GND	—	—	——
74	—	—	Not used	——
75	CAP ON	O	Capstan driver ON control signal	IC005⑬ Capstan driver
76	CAP FWD/$\overline{REV}$	O	Capstan rotaing direction control signal, FWD is selected with "H", RVS is selected with "L"	IC005⑳ Capstan driver
77	$\overline{RP\ PB\ MODE}$	O	REC/PB mode select signal of RP amplifier and ATF IC	Q010 Ⓑ
78	FE ON	O	Flying erase oscillation ON/OFF signal. Oscillation is selected with "H"	To RP AMP.
79	JOG VD	O	Artificial VD output terminal input to VIDEO signal in varying speed playback	To VIDEO block
80	RF SWP	O	RF SWP output temrinal	RP block VIDEO/AUDIO block

Decoder port for the chip cell allocation list (TC4028)

No.	Port name	Port allocation name
3	Q0	E^2-ROM CS
14	Q1	
2	Q2	VA S/P STB
15	Q3	Φ II SR CS
1	Q4	COSMO CS
6	Q5	MARKER CS
7	Q6	CG STB
4	Q7	PCM CS
9	Q8	PCM S/P STB
5	Q9	—

1-11. MODE CONTROL SYSTEM TERMINAL FUNCTION FD-15P BOARD IC201 (μPD75312)

Pin No.	Port name	Port allocation name	I/O	The another connection	Function•Remarks
1	S12		O	LCD	Segment signal output terminal of the liquid crystal display element (LCD)
2	S13		O	LCD	
3	S14		O	LCD	
4	S15		O	LCD	
5	S16		O	LCD	
6	S17		O	LCD	
7	S18		O	LCD	
8	S19		O	LCD	
9	S20		O	LCD	
10	S21		O	LCD	
11	S22		O	LCD	
12	S23		O	LCD	
13	S24/BP0		O	LCD	
14	S25/BP1		O	LCD	
15	S26/BP2		O	LCD	
16	S27/BP3		O	LCD	
17	S28/BP4	TITL CS	O	FD	Chip selector signal of the standard cell for titler (IC301)
18	S29/BP5	~REMO CS	O	FD	Chip selector signal of the wireless remote control reception microcomputer (IC203)
19	S30/BP6	S RAM CS	O	FD	Chip selector signal of RAM for the titler (IC302)
20	S31/BP7	~CAM CS	O	CAM	Chip selector signal of the camera microcomputer (IC501)
21	COM0			LCD	Remote control signal output terminal of the liquid crystal display element (LCD)
22	COM1			LCD	
23	COM2			LCD	
24	COM3			LCD	
25	BIAS			LCD	Output terminal for dividing resistance cut of the liquid crystal display element (LCD)
26	VLC0			LCD	Power source supply terminal of the liquid crystal display enement (LCD)
27	VLC1			LCD	
28	VLC2			LCD	
29	P40	~VTR POWER	O	FU	Turning ON/OFF signal of the VTR system DC/DC converter
30	P41	~CAM POWER	O	CAM	Turning ON/OFF signal of the CAM system DC/DC converter
31	P42	~SYSTEM RESET	O	ALL	Initializing (reset) signal of each microcomputer or IC
32	P43	~TALLY	O	VF	Tally LED flashing signal
33	VSS				Ground power source
34	P50	K OUT 0	O	FD	*Output signal of the key matrix*
35	P51	K OUT 1	O	FD	
36	P52	K OUT 2	O	FD	
37	P53	K OUT 3	O	FD	
38	P00/INT4	~BATT IN	I	FD	Signal for the battery or the AC adapter attaching/removing detection

Pin No.	Port name	Port allocation name	I/O	The another connection	Function•Remarks
39	P01/~SCK	~SCK	O/I	ALL	Serial clock for serial communication (This is input only when communicating with camera microcomputer)
40	P02/S0/SB0	DATA TO SLVE	O	ALL	Data output signal for serial communication
41	P03/SI/SB1	DATA TO MSTR	I	ALL	Data input signal for serial communication
42	P10/INT0	SYSTEM SYNC	I	SS	Timing signal for serial communication
43	P11/INT1	~LI PRE END	I	FD	Pre-end detection signal of the lithium battery (Set value is 2.8V or less)
44	P12/INT2	~LINCS PWR ON	I	FD	POWER ON requiring signal of the LANC communication (Power is turned on with L at 140ms or more)
45	P13/TI0	DATA TO MODE	I	SS	Serial communication data input signal of EE-PROM
46	P20/PT00	K OUT4/DATA TO E^2	O	SS	Data output signal of the output signal +EE-PROM of the key matrix
47	P21	K OUT5/~SCK E^2	O	SS	Serial clock signal of the output signal +EE-PROM of the key matrix
48	P22/PCL	K OUT 6	O	FD	Output signal of the key matrix
49	P23/BUZ				
50	P30/LCDCL	SELECT 1	O	SS	Signal for producing chip select
51	P31/SYNC	SELECT 2	O	SS	
52	P32	SELECT 3	O	SS	
53	P33	~VTR SW	I	FD	Forced VTR mode signal (Uned at the place for business)
54	VDD				Positive voltage supplying terminal
55	XT1				Crystal vibrator connecting terminal for clock
56	XT2				
57	NC				
58	X1				Ceramic connecting terminal for the main system clock oscillation
59	X2				
60	P60/KR0	K IN 0	I	FD	Key matrix input signal
61	P61/KR1	K IN 1	I	FD	
62	P62/KR2	K IN 2	I	FD	
63	P63/KR3	K IN 3	I	FD	
64	P70/KR4	K IN 4	I	FD	
65	P71/KR5	K IN 5	I	FD	
66	P72/KR6	K IN 6	I	FD	
67	P73/KR7	K IN 7	I	FD	
68	~RESET	~RESET	I	FD	Reset signal input terminal
69	S0		O	FD	Output 1/64 of the oscillation for clock (32.768kHz/64≒512Hz)
70	S1		O	LCD	
71	S2		O	LCD	
72	S3		O	LCD	
73	S4		O	LCD	
74	S5		O	LCD	
75	S6		O	LCD	
76	S7		O	LCD	
77	S8		O	LCD	
78	S9		O	LCD	
79	S10		O	LCD	
80	S11		O	LCD	

SECTION 2
SERVICE MODE

☆This unit adopts the camera adjustment and the EVR (Electronic Variable resistor) with the SENSER LANC system.

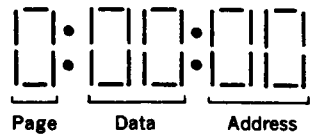
<SENSER LANC>
SENSER LANC is the LANC format to adjust the EVR (Electronic Variable resistor) of Video 8 Handycam and to perform tests by using the LANC (control L). This word stands for the same as the SERVICE LANC formerly used, however, the unified word "SENSER LANC" will be used with this substantial functions.

2-1. HOW TO USE RM-95 JIG (REMOTE CONTROL FOR ADJUSTMENT)

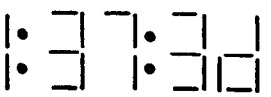
RM-95 jig is used to operate the SENSER LANC. HOLD switch of this jig is remodelled for service to get the SENSER LANC mode. Replacing microcomputer in RM-95 is required for the old-model RM-95 jig, which has no page display function.

Old model	μPD7503G-A71-12 μPD7503G-C23-12	8-759-142-56 8-759-146-77	Page is not displayed (Replacing microcomputer is required)
New model	μPD7503G-C56-12	8-759-148-35	Page is displayed

LCD display of RM-95



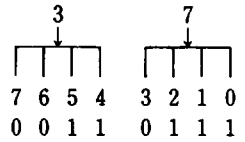
⇨ Example



This means that the page 1 and address 3D is data of 37.

• Reference between Data and Bit

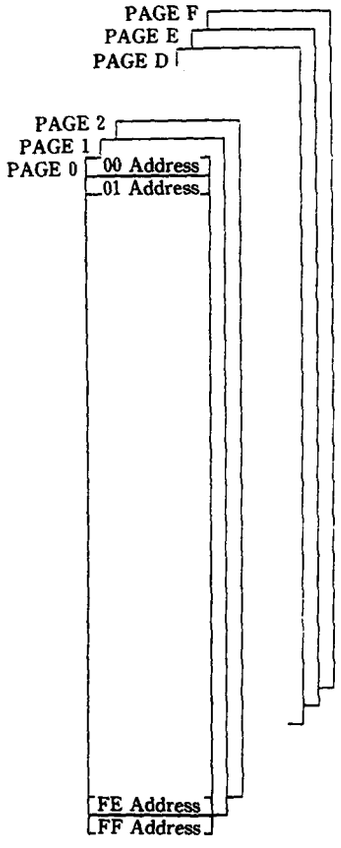
When the data is 37 ⇨ Bit



Page	Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	3D	MP-HG		ME/MP	REC PROOF	V MUTE	A MUTE	JOG	VA PB MODE
		0	0	1	1	0	1	1	1

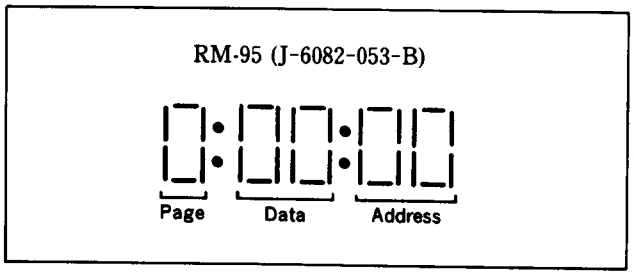
The data in the above list means as follows:
ME SW .....ON
REC PROOF SW ....ON
Audio mute .....ON
JOG.....ON
VA PB MODE.....ON

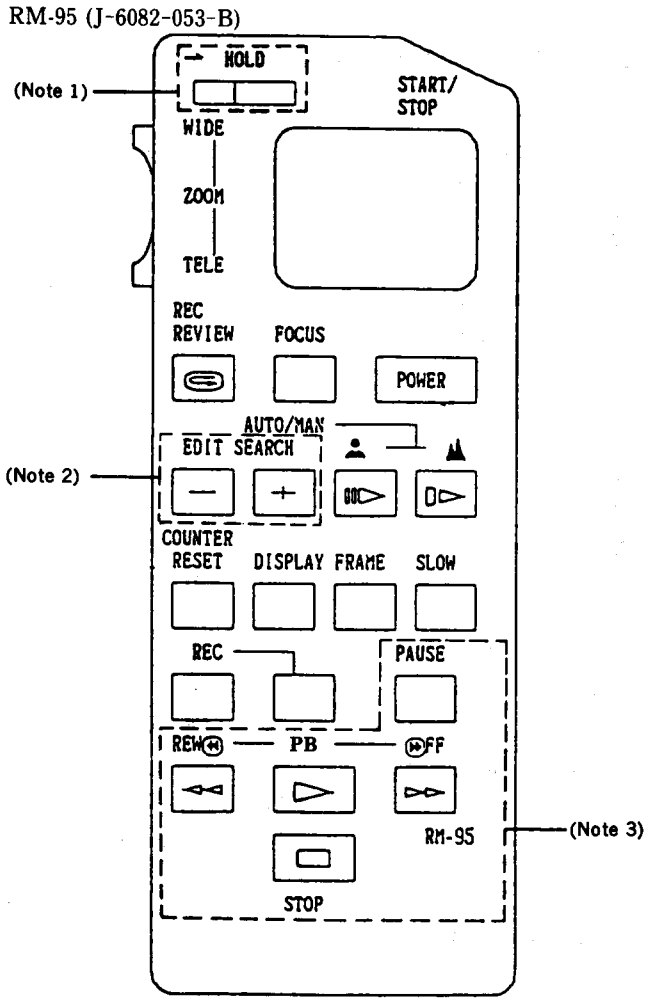
2-1-1. SENSER LANC Memory Map



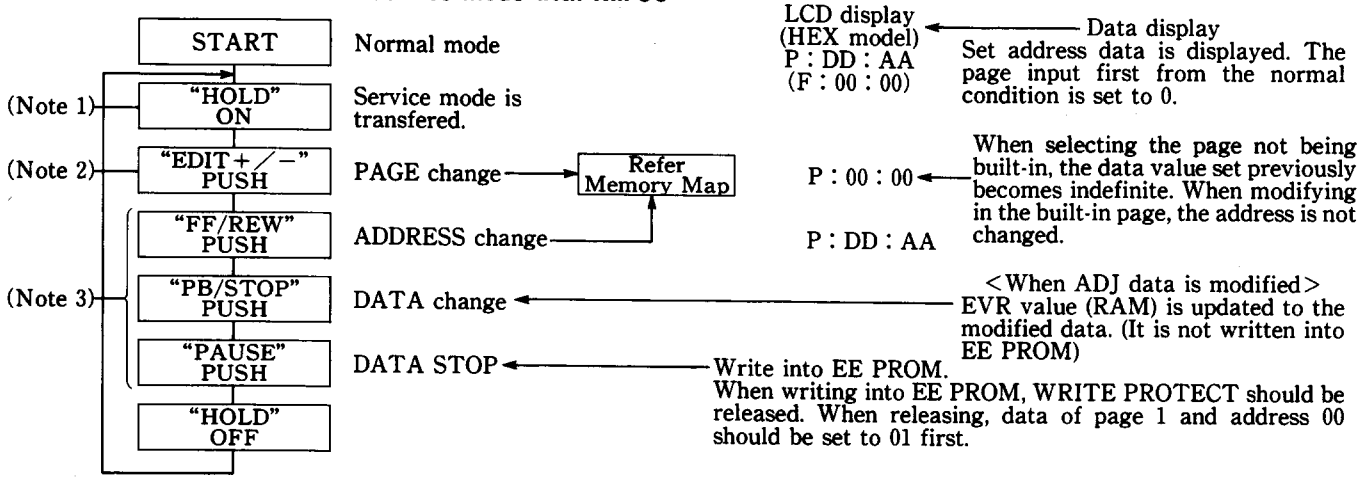
PAGE	Page allocation	Description
0	Service	
1	Mode Control RAM	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2	Mode Control I/O	
3	Mechanical Control RAM	RAM and I/O memory area of the mechanical controller.
4	Mode Control I/O	
5	Camera microcompuler RAM	RAM and I/O memory area of the camera micro controller.
6	Camera microcompuler I/O	
7	Spare	
8	Spare	
9	Spare	
A	Spare	
B	Spare	
C	Spare	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is tuned off. Releasing protect is required for changing data.
E	Camera EE-PROM2	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is tuned off.
F	Camera EE-PROM1	

Note) There are 16 types of page from 0 to F. The allocation of page is as the above list. Only the memory of page D, E and F is not erased when the power is turned off as the EVR (Electronic Variable resistor).





2-1-2. Tansfer method of the service mode with RM-95


START
Normal mode
(Note 1)
"HOLD" ON
Service mode is transfered.
(Note 2)
"EDIT+/−" PUSH
PAGE change
Refer Memory Map
"FF/REW" PUSH
ADDRESS change
(Note 3)
"PB/STOP" PUSH
DATA change
"PAUSE" PUSH
DATA STOP
"HOLD" OFF
LCD display (HEX model)
P : DD : AA
(F : 00 : 00)
Data display
Set address data is displayed. The page input first from the normal condition is set to 0.
P : 00 : 00
When selecting the page not being built-in, the data value set previously becomes indefinite. When modifying in the built-in page, the address is not changed.
P : DD : AA
<When ADJ data is modified>
EVR value (RAM) is updated to the modified data. (It is not written into EE PROM)
Write into EE PROM.
When writing into EE PROM, WRITE PROTECT should be released. When releasing, data of page 1 and address 00 should be set to 01 first.

Command name	Command function	Function Button with RM-95
Page Up	Page+ 1	Edit Search+
Page Down	Page− 1	Edit Search−
Direct Page Set	Set to direct page	Event Clear
Address Up	Address+1	Fast Forward
Address Down	Address−1	Rewind
Data Up	Data+ 1	Play Back
Data Down	Data−1	Stop
Store	Write data into EEPROM. RAM	Pause

2-1-3. ADJUST, TEST MODE description

	MODE	PAGE/DATA/ADDRESS	Contents
ADJUST	Switching Position Adjustment	d : -- : 04 (high) d : -- : 05 (low)	Switching position adjustment See to page 115 for details
	Battery Down Adjustment	d : -- : 06 (Sensor value) d : -- : 07 (Set value)	Use for battery down adjustment See to page 114 for details
TEST MODE	Pass Adjustment Truck Shift	1 : 30 : 4D	Truck shift for pass adjustment Set to the data described left and set the playback mode.
	Emergency Inhibit	1 : 10 : 4D	Detection of emergency is inhibited. Even if battery is ended, power is not turned off. SP/LP is not automatically distinguished. Emergency detection except for TAPE/TOP•END is inhibited.
	Emergency Code	D : -- : 20~22 D : -- : 24~26	First emergency is displayed. Last emergency is displayed. (✱ See to 1) (IC501 μPD75312GF-018 and 024 are not displayed.)
	RECOG SW Check	1 : -- : 3D 1 : -- : 3E	Mode switch position is displayed. RECOG SW ON OFF is displayed. (✱ See to 2)
	Function SW Check	1 : -- : E8~ED	Pressing KEY is checked. (✱ See to 3)
	Motor single check	3 : 10 : DD (Loading Ⓜ) 3 : 11 : DD (Drum Ⓜ) 3 : 12 : DD (Capstan Ⓜ)	Rotating in right direction, inverting, stopping of each motor can be separately controlled. • Loading Motor • Drum Motor (✱ See to 4) • Capstan Motor
	Sensor check	3 : 21 : DD	The following sensor is input by performing A/D selecting, and the A/D selecting value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction DEW sensor. (✱ See to 5)
	Reception contents check of wireless remote control	1 : -- : 1E and 1D	The received code contents of the remote control code can be confirmed. (✱ See to 6)

※1 Emergency Code Check

With the SENSER LANC (The emergency code has the first emergency and last emergency. The last emergency side is changed when emergency is generated ; the first emergency side records the only code generated first.)

			First	Last	
Page	D	Address	20, 21	24, 25	← Emergency code
Page	D	Address	22	26	← Mode when emergency is generated

Displayed → Be sure to rewrite the address from 20 to 26 to data 00 after the operation.

(1) Emergency code list

Code		Emergency contents
20H,24H	21H,25H	
00	00	Normal mode
01	00	Loading Motor emergency.
02	00	Unloading, Reel emergency.
04	00	Steady, Reel emergency.
08	00	Capstan emergency.
00	01	Drum steady, FG emergency.
00	02	Drum steady, PG emergency.
00	21	Drum steady, FG emergency.
00	22	Drum steady, PG emergency.
00	41	Loading, Drum FG emergency.
00	42	Loading, Drum PG emergency.
00	81	Unloading, Drum FG emergency.
00	82	Unloading, Drum PG emergency.
——	——	Dram steady Phase emergency.

- In order to delete the contents of [the first and the last emergency], write with SENSOR LANC as follows.

Page 1	Address 00	Data 01

After that, write data 00 into each address. After writing, return to

Page 1	Address 00	Data 00

(2) Mode code

Mode	Code	Mode	Code
STOP	20	EDIT S CUE	5A
FF	30	EDIT S REV	5B
REW	38	EDIT S STIL	5F
PB	60	+×1	62
CUE	64	−×1	63
REV	65	−STILL	79
STILL	70	+FRAME	76
REC	40	−FRAME	77
REC. P	41	+×2	66
SHUTTLE EDIT (+)	5A	−×2	62
SHUTTLE EDIT (−)	5B	LOADING	21
CAM STBY	41	UNLOADING	13
CAM REC	40	EJECTED	10
REC REV+	58	+SLOW	72
REC REV−	59	−SLOW	73

Note : Pay attention that the above codes are displayed in the reverse order when FD-15P board IC201 μPD75312GF-018 and 024 are mounted.
Example) PB 06

※ 2 RECOG SW Check

With the SENSER LANC

Page	Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	3D	MP-HG		ME/MP	REC PROOF	V MUTE	A MUTE	JOG	VA PB MODE

"1"=REC inhibit
"1"=ME/0 : MP
"1"=MPHG/0 : Normal

Page	Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	3E	DEW			RP PB MODE	CASSETTE CONTROLLER LOCK	MODE SW2	MODE SW1	MODE SW0

See to the following list

When locking the cassette controller, "1"

• MODE SW CODE LIST

	Address 3E contents			Real port condition			Remark
Position	M SW2	M SW1	M SW0	M SW2	M SW1	M SW0	
EJECT	0	0	0	L	H	H	Cassette controller eject position
IA	0	0	1	H	H	H	Interval A
UNLOAD	0	1	0	L	L	H	Normal EJECT unloaded
IB	0	1	1	H	L	H	Interval B
STOP	1	0	0	H	L	L	STOP mode position
IC	1	0	1	H	H	L	Interval C
FWD	1	1	0	L	H	L	Pinch pressure welded
ID	1	1	1	L	L	L	Interval D
SHAKING HEAD POSITION	0	0	0	L	H	L	Shaking head position

☆ This mode releasing is turn off the SENSER LANC.

✱ 3 Switch check (See to the previous page for reading code.)

With the SENSER LANC:

Page 1	Address E8 to ED	Data Refer to table

Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	K IN 7	K IN 6	K IN 5	K IN 4	K IN 3	K IN 2	K IN 1	K IN 0
E 8 K OUT 0	GAIN	COSTROL UP	PAUSE	REC	PLAY	REW	FF	STOP
E 9 K OUT 1	SHUTTER	CONTROL DOWN	SLOW	FRAME /RVS	INDEX MARK	MENU ▼	DATA SCREEN	VTR
EA K OUT 2	PUSH AUTO	FOCUS	FRAME /FWD	MENU EXEC	MENU	MENU ◀	MENU ▶	CAM
EB K OUT 3	WB	WB	PROGRAM AE	FADER	ZERO MENU	RVS	EDIT CUE	STBY
EC K OUT 4	——	TIME	DATE	EJECT	——	——	COUNTER RESET	START /STOP
ED K OUT 5	COLOR	MERORY	TITLE2	TITLE1	IRIS	——	——	AUTO LOCK

☆ This mode releasing is turn off the SENSER LANC.

● Check the initial set value in shipping after the service, because EE PROM is monuted to VTR in this unit.

D Page Initial set value in shipping (for this unit)

Address	Contents						Set value
0 0 0	Aging mode						00
0 0 1	Each flag area (destination/model /HEAD width1×2MUTE)						9A
0 0 2	VTR REC key acceptance authorization						AEP, UK, AUS : 00 E : 01
0 0 3							--
0 0 4	Switching position (low)						Adjustment value
0 0 5	Switching position (high)						Adjustment value
0 0 6	Battery A/D modification value						Adjustment value
0 0 7	Battery end set area						Adjustment value
0 1 0	SR data storage area	EDIT OFF	MP	HI8	LP		5F
0 1 1	SR data storage area	EDIT OFF	MP	HI8	SP		65
0 1 2	SR data storage area	EDIT OFF	MP	NOR	LP		58
0 1 3	SR data storage area	EDIT OFF	MP	NOR	SP		68
0 1 4	SR data storage area	EDIT OFF	ME	HI8	LP		55
0 1 5	SR data storage area	EDIT OFF	ME	HI8	SP		69
0 1 6	SR data storage area	EDIT OFF	ME	NOR	LP		5C
0 1 7	SR data storage area	EDIT OFF	ME	NOR	SP		68
0 1 8	Titler vertical position adjustment area JOG mode						0C
0 1 9	Titler vertical position adjustment area NOR mode						06
0 1 A	Titler horizontal position adjustment area playback mode						DD
0 1 B	Titler horizontal position adjustment area EE mode						DB
0 1 C	When SR data storage area EDIT is ON : Hi8 mode						65
0 1 D	When SR data storage area EDIT is ON : Normal mode						5C
0 1 E							--
0 1 F							--
0 2 0	First generated emergency code (low) (First emergecy)						00
0 2 1	First generated emergency code (high) (First emergency)						00
0 2 2	Mode code when emergency is generated first						00
0 2 3							00
0 2 4	Last generated emergency code (low) (Last emergency)						00
0 2 5	Last generated emergency code (high) (Last emergency)						00
0 2 6	Mode code when emergency is generated last.						00

✱ 4 In order to operate the motor singly

【Operation】

Write the following number with the SENSER LANC into | Page 3 | Address DD. |

Then the check of each motor is performed.

10H → Loading motor
11H → Drum motor
12H → Capstan motor

After the set of the above data, operation is performed by pressing the following keys. (When the operation is performed with RM-95, set the HOLD switch to left and release the SENSER LANC.)

FF key → Rotating in right direction
REW key → Inverting
STOP key → Stop

Note) In this mode, operation is only performed on the normally loaded condition.

Note) The motor rotating speed is the normal rotating number. (Drum 30Hz, Capstan SP mode speed, Loading normal speed).

In order to release this mode, turn off the SENSER LANC and turn off the power.

✱ 5 In order to read the A/D selecting value (Senser check)

【Operation】

With the SENSER LANC:

Write | Page 3 | Address DD | Data 21 |

The following address (PAGE 3) of the A/D selecting value of each A/D port is displayed.

Address	Selecting value Contents
65	TOP sensor (light ON)
67	TOP sensor (light OFF)
64	END sensor (light ON)
66	END sensor (light OFF)
62	S-REEL FG
63	T-REEL FG
60	Thermistor (for SWP correction)
5F	DEW sensor

The voltage of A/D selecting 1 step: 4.9÷256≒19mV

✱ 6 In order to check the reception contents of the wireless remote control

With SENSER LANC, the received remote control code is displayed to | Page 1 | Address 1E. |

The remote control code is only displayed while the code which the LANC code is shifted to right for 1 bit is pressed, and FF is displayed when the code is released.

The received category code of the remote control is displayed to the upper 4 bit of | Page 1 | Address 1D. |

(The description of the remote control code is omitted in this chart.)

2-1-4. How to use practically

How to use:

How to set the adjustment mode and the TEST mode

Set RM-95 to the service mode.

How to change and write data

Press the PAUSE button of RM-95. Pressing PAUSE button is not required for some RAM and I/O area.

Change and write data of EE-PROM

Removing PROTECT is required. The PROTECT is removed by setting as follows:

Page 1	Address 00	Data 01

(But CAMERA system don't need release, because don't set PROTECT.)

How to release each mode

Releasing from EE-PROM area	Be sure to return the data of PAGE 1 address 00 to 00 from 01, and then turn off the service mode of RM-95.
Releasing from RAM and I/O area	Turn off the service mode or turn off the power, because hoding of data is not required.

- In order to perform the pass track shift.....Refer to page 62.
- In order to inhibit the emergency detection.....Refer to the list in page 57.
- In order to check the emergency code.....Refer to page 57.
- In order to operate the motor singly.....Refer to page 60.
- In order to check the function switch.....Refer to page 59.
- In order to check the mechanical switch.....Refer to page 58.
- In order to read the A/D selecting value.....Refer to page 60.
- In order to check the reception contents of the wireless remote control.....Refer to page 60.

SECTION 3
MECHANICAL ADJUSTMENTS

For Mechanical Adjustments

Refer to mechanical adjustment (8 mm Video MECHANICAL ADJUSTMENT MANUAL III) manual for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-972-732-11)

For setting of the track shift mode, however, refer to the following.

3-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

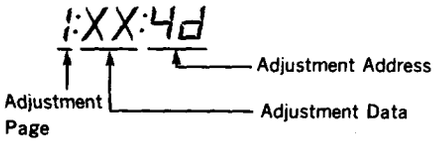
[Setting Method]

1) Set the adjustment commander to the HOLD ON side.
2) Press EDIT SEARCH + button once, and select page 1.
3) Select the adjustment address 4D with FF or REW button.
4) Set to 3X with PLAY and STOP button. (Setting of track shift mode)

Note: 3X should be the number from 31 to 3F. (To display "3X" with PLAY and STOP button is simple to shift.)

(When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)

5) Set to the HOLD OFF side in order to set the normal mode.



(1X : TEST 1
2X : TEST 2 ('CH Playback)
3X : TEST 3 (Shift mode)
4X : Shift release)

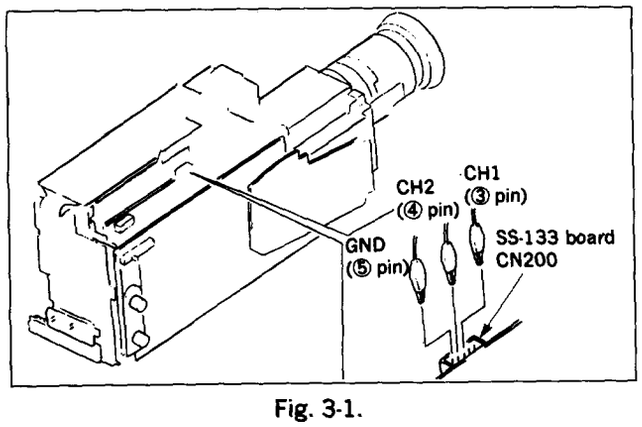


Fig. 3-1.

3-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guide, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   (CH1 : SS-133 board CN200 pin ③ (RF OUT)
   CH2 : SS-133 board CN200 pin ④ (RF SWP))
3) Play back the tracking alignment tape (WR5-1CP) (8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet sides. When not flat, make adjustment as follows. (Refer to Figs. 3-1 and 3-2.)

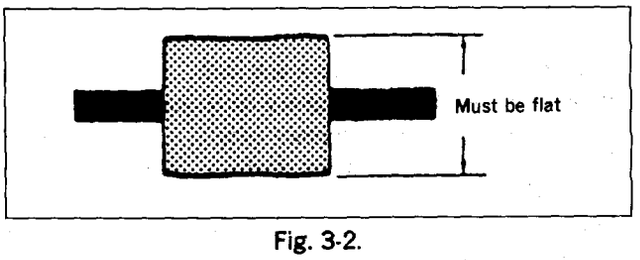


Fig. 3-2.

SECTION 4
CAMERA ADJUSTMENTS

See the adjusting part location diagram from on page 106 for the adjustment.

PREPARATION FOR ADJUSTMENT (CAMERA BLOCK)

4-1. LIST OF SERVICING JIGS

• Oscilloscope • Stabilized power supply (2 units) • Adjusting screwdriver • L lench • Stop watch
• Color monitor TV • Vectorscope • Desk-top calculator

Ref. No.	Name	Part No.	Use
J-1	Filter (C14)	J-6080-054-A	Auto white balance adjustment
J-2	ND filter 0.4	J-6080-806-A	Max gain adjustment, shutter IN/OUT adjustment (2 psc. use)
	ND filter 0.1	J-6080-807-A	Max gain adjustment, shutter IN/OUT adjustment, Auto focus check
	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 pcs. use) Auto focus check
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Extension cable (5P)	J-6082-043-A	To connect VC-67P board CN304 and DC-DC converter
	Extension cable (4P)	J-6082-042-A	To connect VC-67P board CN307 and VA-62 board CN650
J-6	Extension cable (12P)	J-6082-056-A	To connect VC-67P board CN305 and FD-15P board W201
J-7	Camera fixing jig	J-6080-894-A	
J-8	Siemens-star	J-6080-875-A	Flange back adjustment
J-9	Adjustment remote control * 1	J-6082-053-B	
J-10	AF microcomputer data reader jig * 2	J-6082-025-A	

* 1 : Microcomputer IC in the adjustment Remote controller except for UPD7503G-C56-12 (8-759-148-35) does not allow the page selecting. Replace the microcomputer in such a case.
* 2 : Change the fixed number of R1 from 10kΩ to 100kΩ in the AF microcomputer data reading jig. (If the number is kept to 10kΩ, the adjustment data can not change because of the difference of the impedance.)
When adjusting the old-model Handy Cam, 100kΩ is allowed to perform the adjustment.

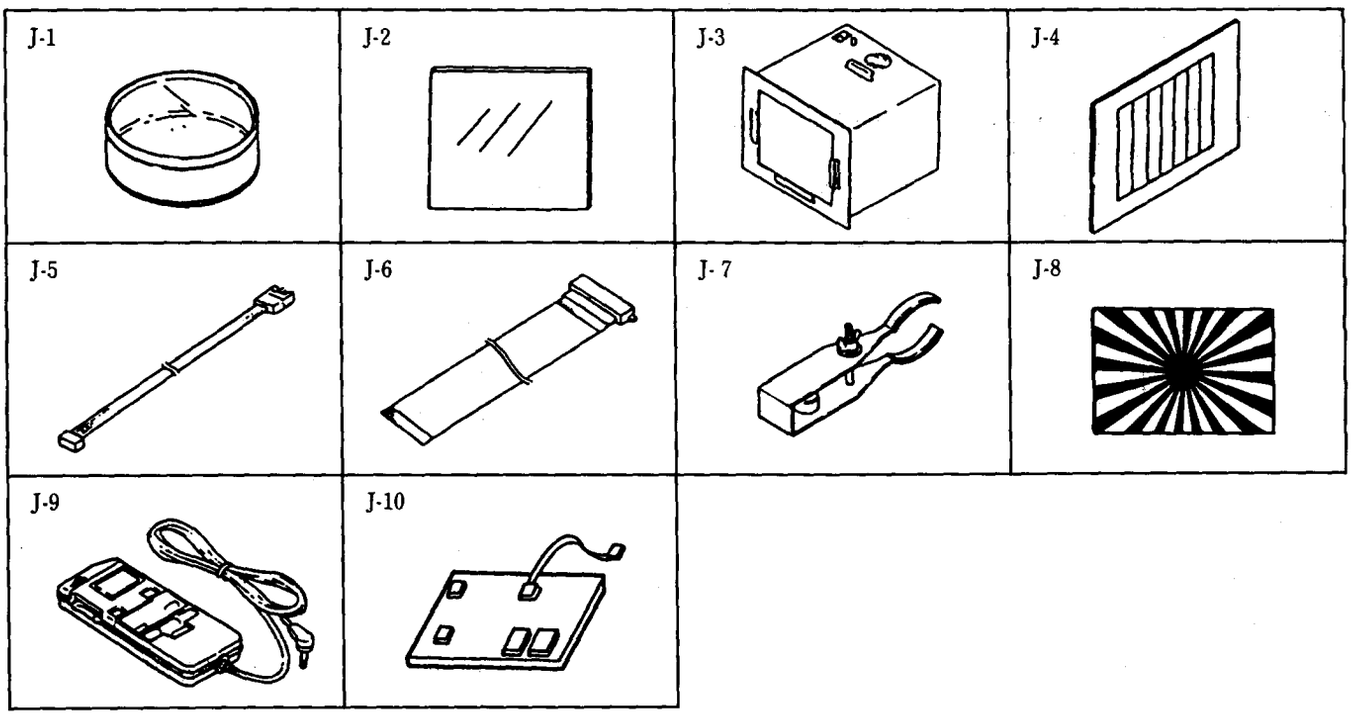


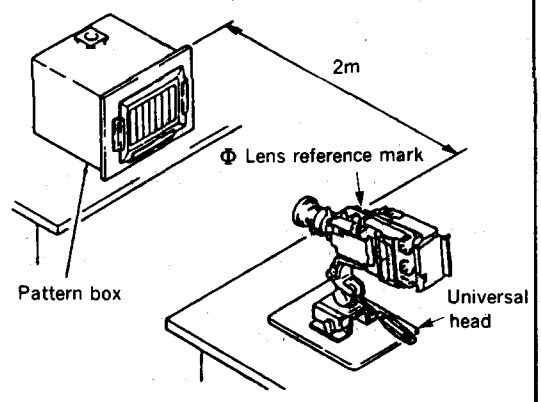
Fig. 4-1.

4-2. PREPARATION FOR ADJUSTMENT

4-2-1. Preparation

Note : Refer to the service manual, "SECTION 2. DISASSEMBLY" for details of the cabinet and individual boards removal procedure.

1) Connect the camera block and the video block by using the extension cable, and other equipment as shown in Fig. 4-3.
2) EVF (Electrical View Finder) section VF-26P or VF-27P boards is necessary for confirmation of shutter speed, white balance mode and etc.
   If not necessary, it can removed by taking out CN703 on the SW-120P board.
3) MIC board (MC-43P board) is not necessary. Remove it by taking out CN801 on the MC-43P board.



When the camera block and the video block are separated with the cabinet removed, fix by using the camera fixing jig.

Fig. 4-2.

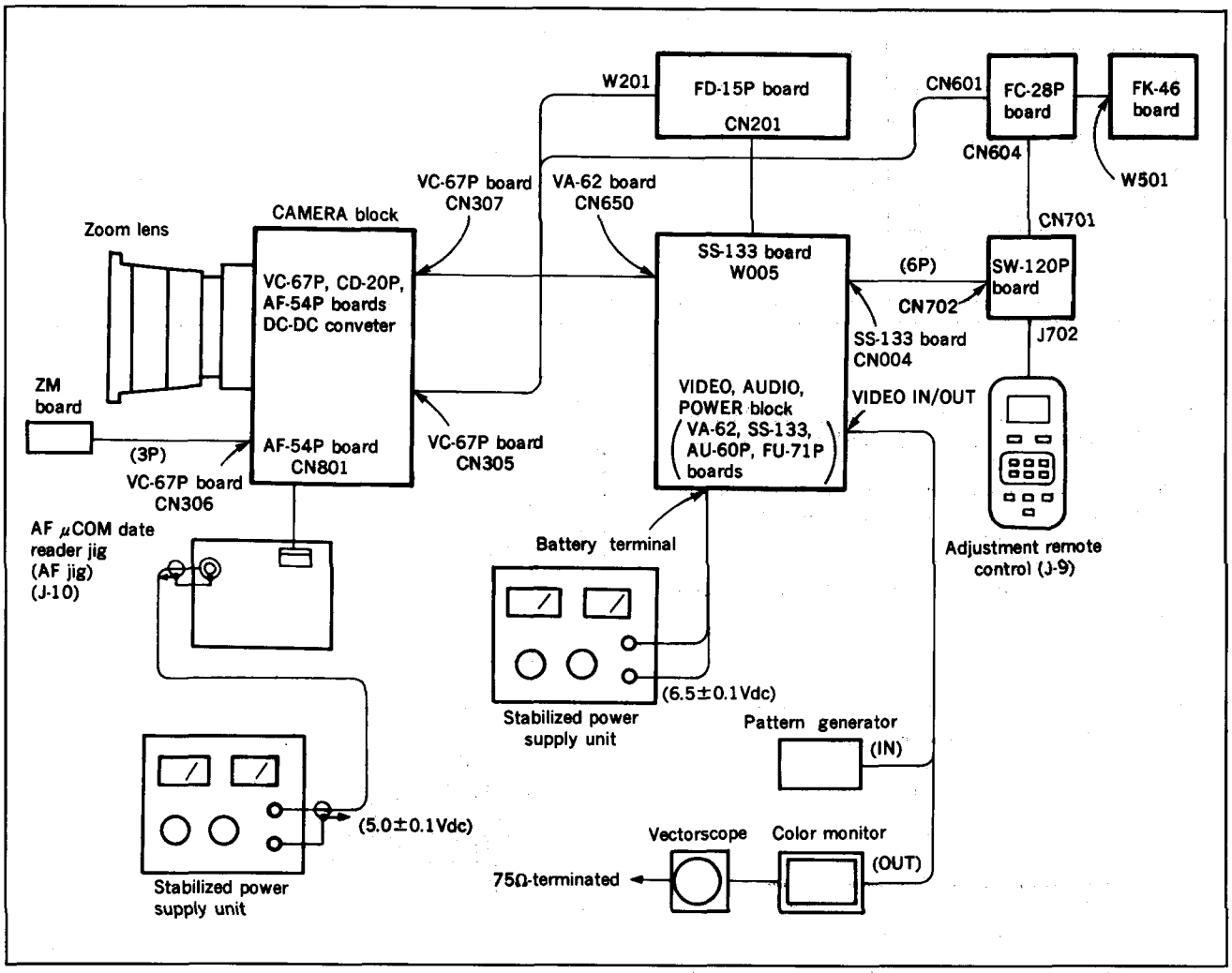


Fig. 4-3.

4-2-2. Caution

1) Setting of switches
   Unless otherwise specified, set the switches to the following position for making adjustments.
   1. CAMERA/VTR/POWER switch (S509 on FK-46 board)
      .....CAMERA
   2. STANDBY switch (S701 on SW-120P board)
      .....STANDBY
   3. AUTO LOCK switch (S217 on FD-15P board)
      .....OFF
   4. WHITE BALANCE button (S209 on FD-15P board)
      .....INDOOR mode ("☼" indication appears on EVF.)
   5. FOCUS button (S212 on FD-15P board)
      .....MANUAL mode
   6. IRIS button (S201 on FD-15P board)
      .....CENTER
   7. SHUTTER SPEED button (S215 on FD-15P board)
      .....NORMAL mode (No indications of "100" "2000", etc. appear on EVF.)
2) Adjustment order
   As a rule, adjust in described order.
3) Objects
   1. Color bar chart (standard picture frame)
      When making Adjustments by the use of a color bar chart, adjust the picture frame as shown in Fig. 4-4. (Standard picture frame)

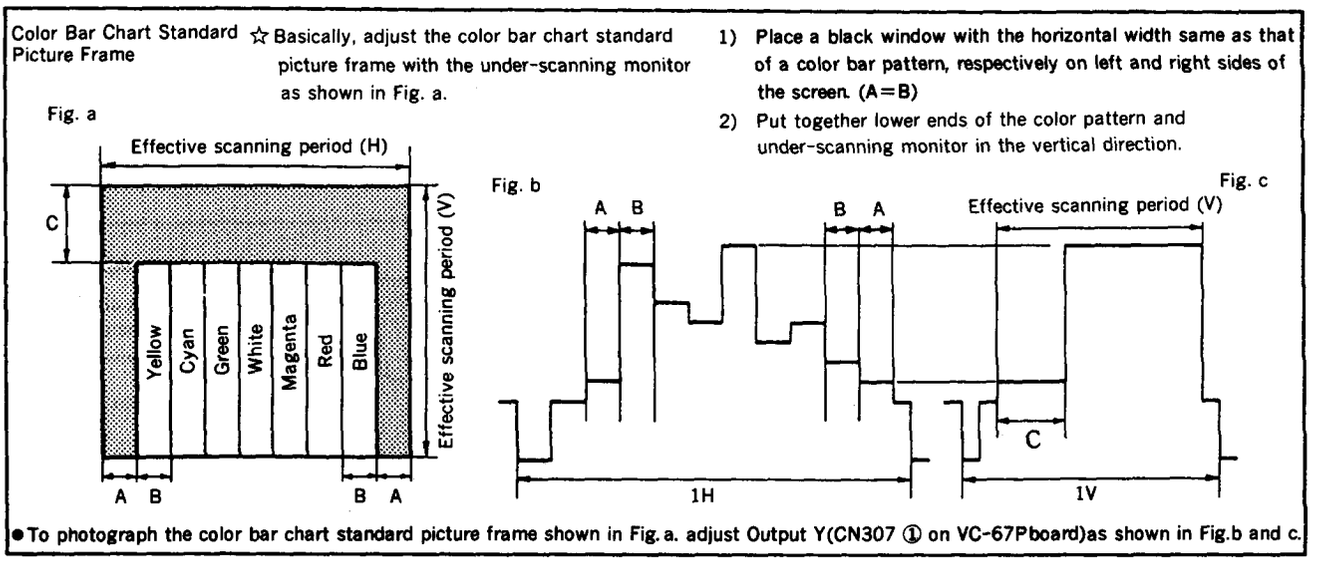

Color Bar Chart Standard Picture Frame
☆ Basically, adjust the color bar chart standard picture frame with the under-scanning monitor as shown in Fig. a.
1) Place a black window with the horizontal width same as that of a color bar pattern, respectively on left and right sides of the screen. (A=B)
2) Put together lower ends of the color pattern and under-scanning monitor in the vertical direction.
Fig. a
Effective scanning period (H)
C
Yellow
Cyan
Green
White
Magenta
Red
Blue
Effective scanning period (V)
A B
B A
Fig. b
A B
B A
1H
Fig. c
Effective scanning period (V)
C
1V
●To photograph the color bar chart standard picture frame shown in Fig. a. adjust Output Y(CN307 ① on VC-67Pboard)as shown in Fig.b and c.

Fig. 4-4.

2. All white pattern
   Remove a color bar chart from the pattern box and set the zoom lever fully to the TELE side (68mm).
3. High luminance pattern
   Prepare a high luminance pattern as shown in Fig. 3-5 and adjust the picture frame as shown in Fig. 4-6.
4. Siements star (J-6080-875-A)
   orient a camera to have the siemens star center coincide with the monitor screen center on a monitor TV screen.

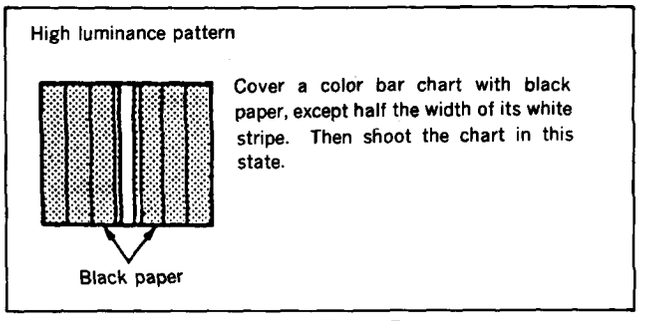

High luminance pattern
Cover a color bar chart with black paper, except half the width of its white stripe. Then shoot the chart in this state.
Black paper

Fig. 4-5.

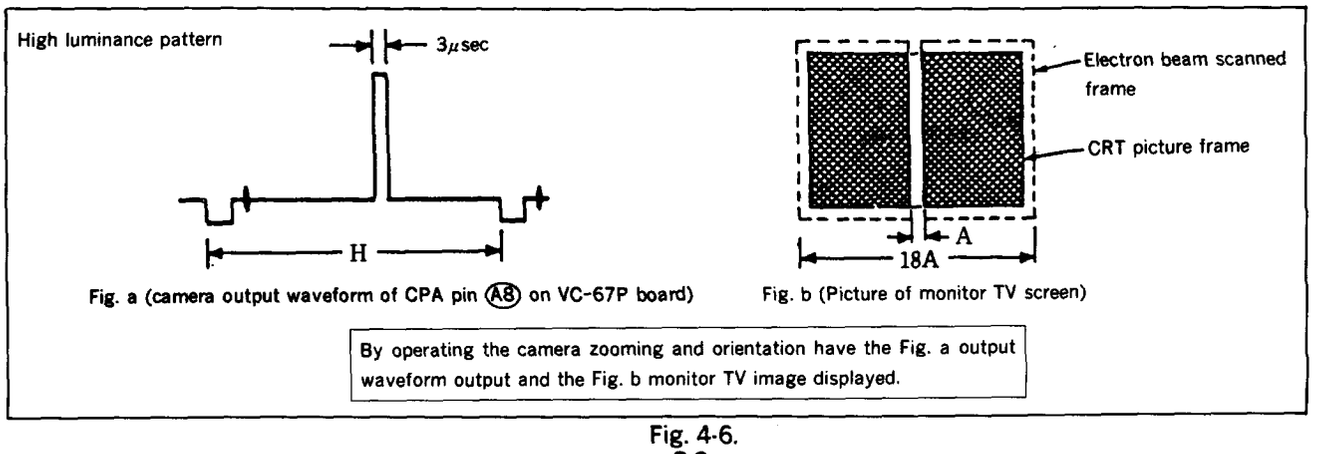

High luminance pattern
3μsec
H
Fig. a (camera output waveform of CPA pin (A8) on VC-67P board)
Electron beam scanned frame
CRT picture frame
A
18A
Fig. b (Picture of monitor TV screen)
By operating the camera zooming and orientation have the Fig. a output waveform output and the Fig. b monitor TV image displayed.

Fig. 4-6.

4-2-3. Adjustment Remote Control

In the camera block, the EVR (Electronic Variable Resistor) is used as an adjustment element in place of a conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (VC-67P board IC501). This microcomputer reads the data written in the non-volatile memory inside the microcomputer and sends it to the EVR. The EVR generates an adjustment voltage by D-A conversion of this data (8 bits per one adjustment point).

To adjust, the camera block, therefore, it is necessary to rewrite the adjustment data written in the non-volatile memory. The adjustment remote control is used for this purpose. The adjustment remote control performs bidirectional communications with the microcomputer in the camera block through a remote control signal line (LANC). UP/DOWN commands for adjustment page, address and data are sent from the adjustment remote control to the microcomputer in the camera block. Sent from the microcomputer in the camera block to the adjustment remote control are the adjustment page, address and data.

Note: The microcomputer IC in the adjustment remote controller except for new microcomputer (UPD7503G-C56-12) dose not allow the page selecting. Replace with the new microcomputer (8-759-148-35) in such a case.

1. Using the Adjustment Remote Control

1) Connect the adjustment remote control to the REMOTE terminal (SW-120P board J701).
   (Shift the HOLD switch of the adjustment remote control to the HOLD position (SERVICE position).)
2) Turn on the power for the main unit.
3) If the connection is correct, the following is displayed on the adjustment remote control LCD. (The adjustment data varies from one set to another.)

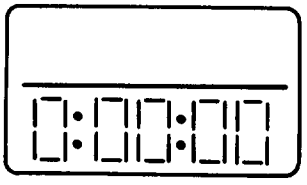


Fig. 4-7. (a)

4) Specify your desired adjustment page by the adjustment remote control.
   Pressing the EDIT SEARCH (+) increments the adjustment page. Pressing the EDIT SEARCH (−) decrements it. The adjustment page is shown in the hexadecimal numbers and there are 16 of them from 1 to F. The CAMERA adjustment page is page F and Pressing the EDIT SEARCH (−) buttom one push.

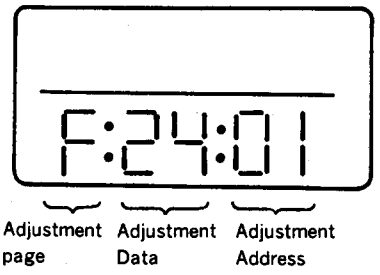


Fig. 4-7. (b)

5) Specify your desired adjustment address by the adjustment remote control. Pressing the FF (▶▶) button increments the adjustment address, and pressing the REW (◀◀) button decrements it.
   (The adjustment address is shown in the decimal number and there are 256 of them from 00 to FF. The adjustment address corresponds to the output terminal of the EVR (IC301 on the VC-67P board, IC504 on the VC-67P board, and IC004 of the MX-12P board). Refer to Table 3-3 for adjustment of each address.)
6) Make adjustment by increasing/decreasing the adjustment data.
   Pressing the PLAY (▶) button increases the adjustment data, and pressing the STOP (■) button decreases it.

- The adjustment data is shown in the hexadecimal number and assumes 256 kinds of values ranging from 00 to FF.

Hexadecimal No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Indication of LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal converted value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 4-1.

- The adjustment data corresponds to the output voltage of the EVR (IC301 on the VC-67P board, IC504 on the VC-67P board, and IC004 on the MX-12P board) as follows:
  (MX-12P board IC004 : 2.0 ⟷ 5.0 Vdc
  VC-67P board IC301 : 0 ⟷ 5.0Vdc
  VC-67P board IC504 : 1.0 ⟷ 3.5Vdc)

7) Change the adjustment address with the FF (▶▶) or REW (◀◀) button in order to store the adjustment data into the non-volatile memory built in the EVR/AWB microcomputer (VC-67P board IC501).
   (If this operation is omitted, new adjustment data will not be stored into the non-volatile memory.)
8) There is a function provided to make note of the last error cuased by the COUNTER RESET button during operation of the set even if the power is turned off. This LAST MEMO EMERGENCY (last error) can be cleared.

2. Cautions for Using the Adjustment Remote Control

Erroneous operation of the adjustment remote control may delete correct adjustment data. To avoid this, it is recommended to make note of all the adjustment data before adjustment and of new adjustment data every time adjustment of one item is completed.

3. List of Adjustment Addresses

Use the adjustment page F for the camera part adjustment of this unit.

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
01	MX-12P board IC004 pin ⑱	R CONT	Auto white balance adjustment	
02	MX-12P board IC004 pin ⑲	B CONT		
03	MX-12P board IC004 pin ②	C_1 GAIN	Matrix (3) C_1 gain adjustment	
04	MX-12P board IC004 pin ③	B GAIN	Pre-white balance adjustment	
05	MX-12P board IC004 pin ④	R GAIN		
06	MX-12P board IC004 pin ⑤	Y_2 GAIN	Matrix adjustment (2) Y_2 gain adjustment	
07	MX-12P board IC004 pin ⑥	Y_1 GAIN	Matrix adjustment (1) Y_1 gain adjustment	
08	MX-12P board IC004 pin ⑦	Y_H GAIN	Y_H level adjustment	
09	MX-12P board IC004 pin ⑧	R-Y GAIN	Color reproducibility adjustment	
0A	MX-12P board IC004 pin ⑨	B-Y GAIN		
0B	MX-12P board IC004 pin ⑫	R-Y HUE		
0C	MX-12P board IC004 pin ⑬	B-Y HUE		
0D	VC-67P board IC301 pin ⑱	SHP LEVEL	H aperture Adjustment	
0E	VC-67P board IC301 pin ⑲	Y LEVEL	White clip, Y level adjustments	
0F	VC-67P board IC301 pin ②	VAP GAIN		
10	VC-67P board IC301 pin ③	SET UP	Set up adjustment	
11	VC-67P board IC301 pin ④	C LEVEL	Chroma level adjustment	
12	VC-67P board IC301 pin ⑤	V SUB CONT	V sub adjustment	
13	VC-67P board IC301 pin ⑥	PG CONT	PG cont adjustment	
14	VC-67P board IC301 pin ⑦	Yr CONT		
15	VC-67P board IC301 pin ⑧	WHITE CLIP	White clip adjustment	
16	VC-67P board IC301 pin ⑨	SYNC LEVEL	Sync level adjustment	
17	VC-67P board IC301 pin ⑫	BURST LEVEL	Burst level adjustment	
18	VC-67P board IC301 pin ⑬	MAX GAIN	Set up, Max gain adjustments	
19	VC-67P board IC504 pin ⑱	IRIS REF	Iris adjustment	
1A	VC-67P board IC504 pin ⑲	AGC REF	AGC adjustment	
1B	VC-67P board IC504 pin ②	HALL GAIN	Hall adjustment	
1C	VC-67P board IC504 pin ③	HALL OFFSET		
1D	VC-67P board IC504 pin ④	FADER LEVEL	Fader level adjustment	
1E	VC-67P board IC504 pin ⑤	———		
1F	VC-67P board IC504 pin ⑥	FADER CONT	Fader level adjustment	
20	VC-67P board IC504 pin ⑦	FOCUS SPEED		
21	VC-67P board IC504 pin ⑧	ZOOM SPEED		
22	VC-67P board IC504 pin ⑨	M IRIS CONT	Not used	
23	VC-67P board IC504 pin ⑫	M AGC CONT		
24	VC-67P board IC504 pin ⑬	AGC IN PULSE		

Table 4-2 (1)

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
25		IN OUT		
26		M12-THR		
27		KATAMUKI		
28		FA-WM		
29		FA-BM	Auto Focus adjustment (1) AF Data Input Preparation	
2A		FH-WM		
2B		FH-BM		
2C		FA-SMH		
2D		FA-SML		
2E		FH-SMH		
2F		FH-SML		
30		LOW-F-SPEED	Focus Motor Speed adjustment	
31		MAN-F-SPEED		
32		STEP-A		
33		END-SENS-V		
34		ZOOM-POSI 1		
35		ZOOM-POSI 2		
36		ZOOM-POSI 3		
37		ZOOM-POSI 4	Macro Aria adjustment	
38		ZOOM-POSI 5		
39		FOCUS-POSI 1		
3A		SEARCH-V		
3B		BACK RUSH 2		
3C		BACK RUSH MODE 3		
3D		ZOOM-TAN-MASK		
3E		ZOOM-END-V		
3F		ZOOM-MODOSI		
40		BACK RUSH-ZOOM		
41		NOT WIDE STOP		
42		MODE 12 NG THR		
43		FA-BASE H-IN		
44		FA-BASE-OUT		
45		AGC-W	Auto Focus adjustment (1) AF Data Input Preparation	
46		AGC-B		

Table 4-2 (2).

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
47		MODE 12 NG LIMIT H		
48		MODE 12 NG LIMIT L		
49		M2 HANTEN		
4A		MODE 5 THR 1		
4B		YOGIRI-IN		
4C		MODE 5 FH FILT		
4D		MODE 5 THR 2 IN		
4E		MODE 5 THR 3		
4F		FH-NG-COUNT		
50		TYUU WAKU		
51		YOGIRI-OUT		
52		MODE 5 THR 20 OUT		
53		AF IRIS IN OUT		
54		MACRO TIME OUT H		
55		MACRO TIME OUT L		
56		MACRO SEARCH		
57		SEISHI		
58		ZOOM-SPEED 1		
59		ZOOM-SPEED 2		
5A		ZOOM-SPEED 3		
5B		ZOOM-SPEED 4		
5C		———		
5D		———		
5E		———		
5F		———		
60		IRIS REF-NOR	} Standard AE level adjustment	
61		IRIS REF-PO		
62		IRIS REF-SP		
63		IRIS DATA 1	IRIS manual data adjustment	
64		GAIN-REF	} Manual gain data adjustment	
65		GAIN-MAX		
66		EMG-AGC	Warning display level adjustment	
67		EMG-AGC-HYS		
68		EMG-AE (H)		
69		EMG-AE (L)		

Table 4-2 (3).

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
6A		EMG-AE-HYS (H)		
6B		MAXSHUT-PO (H)		
6C		MAXSHUT-PO (L)		
6D		MAXSHUT-SP (H)		
6E		MAXSHUT-SP (L)		
6F		REF-WIDTH (H)		
70		REF-WIDTH (L)		
71		SHUT-MULTI (H)		
72		SHUT-MULTI (L)		
73		SHUT-COUNT 1		
74		SHUT STEP-MULTI		
75		IRIS OPEN		
76		REF-TURBO (H)		
77		REF-TURBO (L)		
78		TURBO-WIDTH (H)		
79		TURBO-WIDTH (L)		
7A		TURBO-TR (H)		
7B		TURBO-TR (L)		
7C		SHUT-COUNT 2		
7D		SHUT-COUNT 3		
7E		———		
7F		———		
80		USER R-Y GAIN		
81		USER B-Y GAIN		
82		USER B-Y HUE		
83		USER R-Y HUE		
84		USER SHP LEVEL		
85		USER Y LEVEL		
86		———		
87		———		
88		———		
89		———		
8A		———		
8B		———		
8C		———		

Table 4-2 (4).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
8D		———	AE Check 1. Portrait mode check	
8E		———	AE Check 2. Sports mode check	
8F		———	AE Check 3. Iris Preceding mode check	
90		R3200 MSB		
91		R3200 LSB		
92		R3200 MSB		
93		R3200 LSB		
94		G3200 MSB		
95		G3200 LSB		
96		SHUTTER IN	Shutter IN/OUT adjustment	
97		SHUTTER OUT		
98		START R	Auto white balance adjustment	
99		START B		
9A		R OUT DOOR		
9B		B OUT DOOR		
9C		———		
9D		———		
9E		———		
9F		———		
A0		Ra	Auto white balance adjustment	
A1		Rb		
A2		Rc		
A3		Ba		
A4		Bb		
A5		Bc		
A6		R/B TOP		
A7		R/B MDL		
A8		R/B BTM		
A9		B/R TOP		
AA		B/R MDL		
AB		B/R BTM		
AC		BTM SLP R		
AD		BTM SLP B		
AE		MDL SLP R		
AF		MDL SLP B		

Table 4-2 (5).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
B0		TOP SLP R	Auto white balance adjustment	
B1		TOP SLP B		
B2		KEIKO R		
B3		KEIKO B		
B4		BTM UP		
B5		BTM DWN		
B6		MDL UP		
B7		MDL DWN		
B8		TOP UP	Auto white balance adjustment	
B9		TOP DWN		
BA		KEIKO		
BB		KEIKO DWN		
BC		R TOP LMT		
BD		R DWN LMT	Auto white balance adjustment	
BE		B TOP LMT		
BF		B IN TOP		
C0		B IN MAX		
C1		B OUT MIN		
C2		B OUT DWN		
C3		B DWN LMT		
C4		LL LMT		
C5		TM DIVID		
C6		BM DIVID		
C7		DELAY TM		
C8		FAST TM		
C9		OUT HYS OFF		
CA		OUT B HYS		
CB		———		
CC		———		
CD		———		
CE		———		
CF		———		
D0		SYSTEM	NTSC/PAL select	
D1		———		
D2		———		

Table 4-2 (6).

<table>
<tr><th>Adjust-ment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Memo Column</th></tr>
<tr><td>D3</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>D4</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>D5</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>D6</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>D7</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>D8</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>D9</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>DA</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>DB</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>DC</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>DD</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>DE</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>DF</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E0</td><td></td><td>DISPLAY MODE</td><td>The following adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment data.</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>DISPLAY MODE, R, B, CONT</td></tr>
<tr><td>01</td><td>NEW R, B</td></tr>
<tr><td>02</td><td>R RATIO</td></tr>
<tr><td>03</td><td>B RATIO</td></tr>
<tr><td>04</td><td>R GAIN</td></tr>
<tr><td>05</td><td>B GAIN</td></tr>
<tr><td>06</td><td>RM DATA</td></tr>
<tr><td>07</td><td>GM DATA</td></tr>
<tr><td>08</td><td>BM DATA</td></tr>
<tr><td>09</td><td>NORM R</td></tr>
<tr><td>0A</td><td>NORM B</td></tr>
<tr><td>0B</td><td>R DATA</td></tr>
<tr><td>0C</td><td>G DATA</td></tr>
<tr><td>0D</td><td>B DATA</td></tr>
<tr><td>0E</td><td>R, B AIM</td></tr>
<tr><td>0F</td><td>ERROR</td></tr>
</table></td><td>00</td></tr>
<tr><td>E1</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E2</td><td></td><td>————</td><td></td><td></td></tr>
</table>

Table 4-2 (7).

<table>
<tr><th>Adjust-
ment
Address</th><th>Adjustment Voltage
Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Memo Column</th></tr>
<tr><td>E3</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E4</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E5</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E6</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E7</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E8</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E9</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>EA</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>EB</td><td></td><td>MODE</td><td>The following adjustment mode is selected by changing the adjustment data.<table><tr><th>Adjustment Data</th><th>Adjustment Mode</th></tr><tr><td>00</td><td>NORMAL</td></tr><tr><td>01</td><td>F-HANTING</td></tr><tr><td>03</td><td>ZOOM-POSI</td></tr><tr><td>05</td><td>IRIS-POSI</td></tr><tr><td>0B</td><td>AGC-CONT</td></tr><tr><td>0D</td><td>FOCUS-POSI</td></tr><tr><td>11</td><td>SHUTTER IN/OUT</td></tr><tr><td>13</td><td>AE LEVEL</td></tr><tr><td>ED</td><td>FILTER-FHM</td></tr><tr><td>EF</td><td>FILTER-FAM</td></tr><tr><td>F1</td><td>FILTER-SFH L</td></tr><tr><td>F3</td><td>FILTER-SFH H</td></tr><tr><td>F5</td><td>FILTER-SFA L</td></tr><tr><td>F7</td><td>FILTER-SFA H</td></tr><tr><td>F9</td><td>FILTER-FA L</td></tr><tr><td>FB</td><td>FILTER-FH L</td></tr><tr><td>FD</td><td>FILTER-FA H</td></tr><tr><td>FF</td><td>FILTER-FH H</td></tr></table></td><td></td></tr>
<tr><td>EC</td><td></td><td>AWB MODE 3</td><td></td><td></td></tr>
<tr><td>ED</td><td></td><td>AWB MODE 2</td><td></td><td></td></tr>
<tr><td>EE</td><td></td><td>AWB MODE 1</td><td>The following auto white balance adjustment mode is selected by changing the adjustment data.<table><tr><th>Adjustment Data</th><th>Adjustment Mode</th></tr><tr><td>00</td><td>AWB MODE 1</td></tr><tr><td>10</td><td>WB DIRECT</td></tr><tr><td>F0</td><td>WB FREE</td></tr><tr><td>01</td><td>3200k Data fetch 1</td></tr><tr><td>23</td><td>3200k Data fetch 2</td></tr></table></td><td></td></tr>
</table>

Table 4-2 (8).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
EF		———		
F0		———		
F1		———		
F2		———		
F3		———		
F4		———		
F5		———		
F6		———		
F7		———		
F8		———		
F9		———		
FA		———		
FB		———		
FC		———		
FD		———		
FE		———		
FF		———		

Table 4-2 (9).

4-2-4. Checkpoint Array

Most measurement points for adjustment of the camera block are concentrated on the checkpoint array of the VC-67P board.

Solder a short lead wire, etc. to the terminal required for adjustment and connect an oscilloscope. Table 4-3 shows the terminal numbers and signal names of the checkpoint array.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	N.C	B1	N.C
A2	PG CONT	B2	N.C
A3	N.C	B3	Y (LPF) OUT
A4	N.C	B4	V SUB
A5	VAP OUT	B5	VAP SLICE
A6	TP	B6	N.C
A7	WB-G	B7	Y_H GAIN
A8	CAM Y	B8	Y_2 GAIN
A9	YH	B9	N.C
A10	CAM C	B10	GND
A11	YH OUT 1	B11	IRIS OUT

Table 4-3.

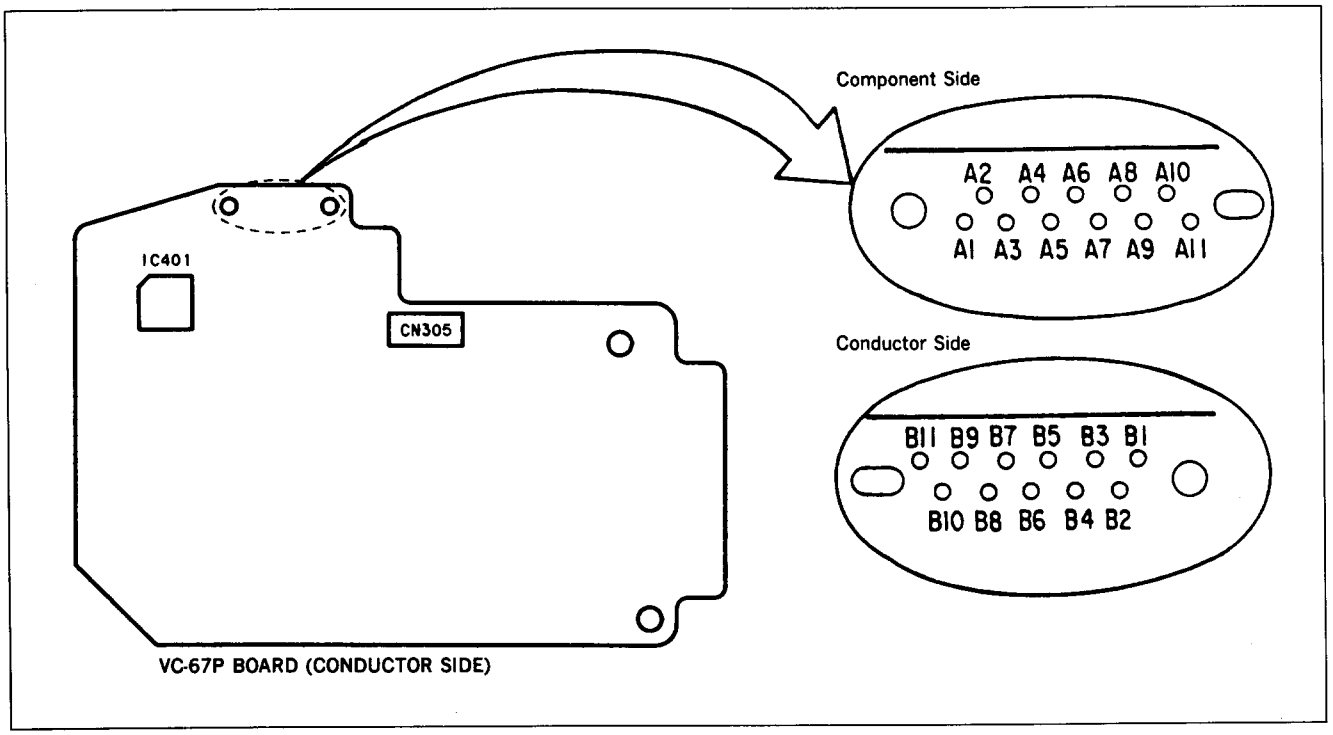


Fig. 4-8.

4-2-5. AF Microcomputer Data Reader Jig

The AF microcomputer data reader jig converts adjustment serial data outputted from the AF microcomputer (AF-54P board CN801) (different data are outputted depending on the adjustment mode, such as HALL (iris) state, focus state, focus motor speed, zoom ring position, etc.) into 2-digit hexadecimal numbers and indicates on the LED.

[Connection]

Connect as shown in the figure below:

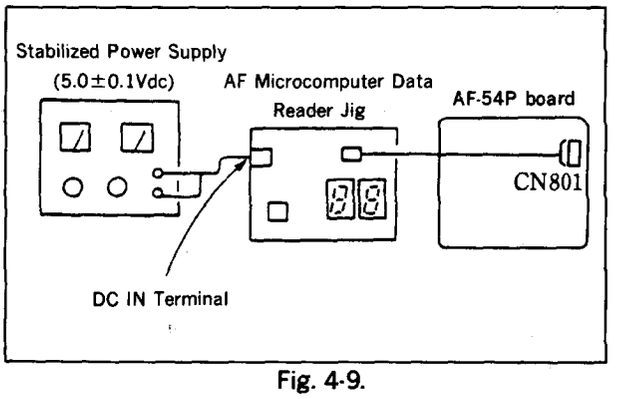


Fig. 4-9.

4-2-6. Data Processing

In order to obtain adjustment data in some adjustment items, it is necessary to compute the display data (hexadecimal number) of the AF microcomputer data reader jig and adjustment remote control.

In this case, convert the hexadecimal number into the decimal number before computation, convert its computed result back into the decimal number to assume it as the adjustment data. Table 4-4 shows a hexadecimal-decimal conversion table.

Hexadecimal — Decimal Conversion Table

Higher Digit of Hex. No. / Lower Digit of Hex. No.	0	1	2	3	4	5	6	7	8	9	A (R)	B (b)	C (c)	D (d) ②	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (R)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: Values in parentheses are those displayed on the AF microcomputer reader jig or adjustment remote control.

(Example) When the AF microcomputer reader jig or adjustment remote control displays "BD(bd)"; Since the higher digit of the hexadecimal number is B (b) and its lower digit is D (d), the decimal number to be obtained is "189" at an intersecting point of ① and ② in the table above.

Table. 4-4.

4-3. ADJUSTMENT OF CAMERA SYSTEM

- In principle, all adjustments must be made in accordance with Adjustment procedure.
- When replacing lens, do not forget to make the following adjustment.

[Adjustment Sequence]

1) 4-3-3. Flange Back Adjustment
2) 4-3-31. Macro Area Adjustment
3) 4-3-7. HALL Adjustment
4) 4-3-8. IRIS Adjustment
5) 4-3-9. Shutter IN/OUT Adjustment

- When replacing CCD imager, do not forget to adjust the camera system property.

4-3-1. Prime Oscillation Adjustment (CD-20P Board)

Object	Color bar chart standard picture frame
Measurement point	DT-77 board pin ② (CL143)
Measuring instrument	Frequency counter
Adjustment element	CT122
Specified value	14187500±71Hz

Note : Connect the frequency counter through a buffer amplifier (Oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 14187500±71Hz with CT122.

4-3-2. PLL Adjustment (CD-20P Board)

Object	Optional
Measurement point	See Fig. 4-10.
Measuring instrument	Digital voltmeter
Adjustment element	CT121
Specified value	2.5±0.2Vdc

[Adjustment Method]

1) Adjust to 2.5±0.2Vdc with CT121.

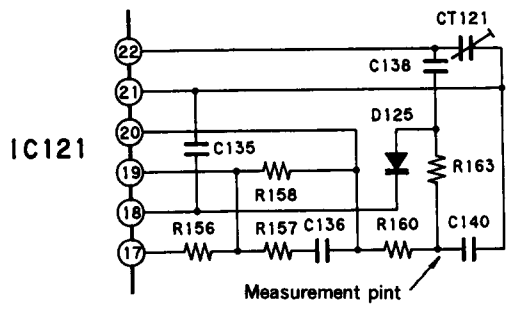


Fig. 4-10.

4-3-3. Flange Back Adjustment

Object	Siemens star (at 2 m in front of the lens datum level ϕ mark)
Measurement point	Check with the monitor TV.
Measuring instrument	
Adjustment element	Flange back adjusting pin
Tools	Phillips screwdriver

[Adjustment Method]

1) Press the FOCUS button (FD-15P board S212) to select the MANUAL mode.
2) Place the Siemens star at a distance of 2 m in front of the lens datum level (refer to Fig. 4-2).
3) Adjust a camera block position to center the Siemens star on the monitor screen with the monitor screen.
4) Check that the lens zoom lever can be moved fully to the WIDE end (8.5 mm) and TELE end (68 mm), respectively, and fix it at the WIDE end. (When this is done, check also zooming operation on the monitor screen.)
5) Set the lens focusing mark at the center of "2".

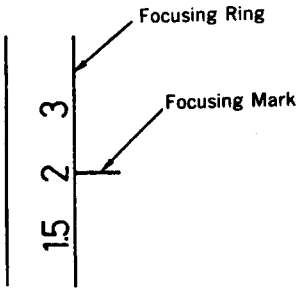


Fig. 4-11.

6) Loosen the flange back setscrew ● with the Phillips screwdriver. (Refer to Fig. 4-13)
7) Viewing the monitor screen, turn the glange back adjusting pin ● to make clearest the wedge located at the center of the Siemens star on the screen. (Turn it 2 to 3 times to the right and left to check the wedge to be clearest.)

   Note : Do not turn the adjusting pin excessively in one direction at a time.
8) Holding the flange back adjusting pin ● not to turn it further, tighten the flange back setscrew ●.
9) With the zoom lever fixed at the WIDE end, turn the focusing ring and stop it at a position which provides the clearest image of the wedge. Check that the focusing ring is within the range shown in Fig. 4-12 at this time.

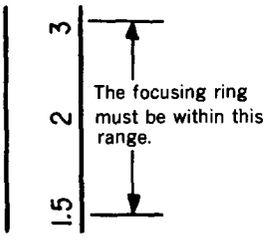


Fig. 4-12.

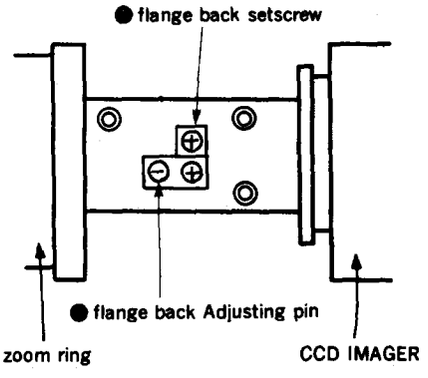


Fig. 4-13.

10) Fix the zoom lever at the TELE end.
11) Turn the focusing ring and stop it at a position which provides the clearest wedge image. When this is done, check that the focusing ring is within a range of ±1.5mm from the center of "2".

4-3-4. Camera DC-DC Converter Voltage Check (VC-67P Board/CD-20P Board)

Measuring isntrument	Digital voltmeter
15V check	
Measurement point	CN101 pin ① (CD-20P Board)
Specified value	$15.0 \pm 0.2V_{DC}$
−9V check	
Measurement point	CN101 pin ② (CD-20P Board)
Specified value	$-9.00 \pm 0.15V_{DC}$
4.9V check	
Measurement point	CN101 pin ③ (CD-20P Board)
Specified value	$4.9 \pm 0.1V_{DC}$
CAM 4.9V check	
Measurement point	CN304 pin ④ (VC-67P Board)
Specified value	$4.9 \pm 0.1V_{DC}$

[Checking Method]

1) Each supply voltage must meet the specified value.

4-3-5. EVR Initial Setting of Adjustment Page F.

Set to the following initial settings of the adjustment data only when the CCD IMAGER was replaced.
Make initial setting of adjustment data when the EVR/AWB microcomputer is replaced.
(Pre-replacement microcomputer data will do.)

Adjustment Address	Adjustment Data Initial Value
0E (Y LEVEL)	9C
0F (VAP GAIN)	90
10 (SET UP)	70
12 (VSUB CONT)	3A
13 (PG CONT)	5A
14 (Yr CONT)	93
15 (WHITE CLIP)	FF
18 (MAX GAIN)	E0
19 (IRIS REF)	4C
1F (FADER CONT)	00
25 (IN OUT)	00
26 (M12-THR)	30
27 (KATAMUKI)	04
28 (FA-WM)	03
2D (FA-SML)	00
2F (FH-SML)	00
30 (LOW-F-SPEED)	34
31 (MAN-F-SPEED)	22

Adjustment Address	Adjustment Data Initial Value
32 (STEP-A)	02
33 (END-SENS-V)	20
34 (ZOOM-POSI 1)	38
35 (ZOOM-POSI 2)	6D
36 (ZOOM-POSI 3)	A2
37 (ZOOM-POSI 4)	DA
38 (ZOOM-POSI 5)	F3
39 (FOCUS-POSI 1)	48
3A (SEARCH-V)	00
3B (BACK RUSH 2)	02
3C (BACK RUSH-MODE 3)	05
3D (ZOOM-TAN-MASK)	20
3E (ZOOM-END-V)	20
3F (ZOOM-MODOSI)	0C
40 (BACK RUSH-ZOOM)	0F
41 (NOT WIDE STOP)	00
42 (MODE 12 NG THR)	02
43 (FA-BASE H-IN)	20
44 (FA-BASE-OUT)	0F
47 (MODE 12 NG LIMIT H)	02
48 (MODE 12 NG LIMIT L)	00
49 (M2 HANTEN)	04
4A (MODE 5 THR 1)	06
4B (YOGIRI-IN)	1E
4C (MODE 5 FH FLT)	01
4D (MODE 5 THR 2 IN)	70
4E (MODE 5 THR 3)	1E
4F (FH-NG-COUNT)	1E
50 (TYUU WAKU)	00
51 (YOGIRI-OUT)	1E
52 (MODE 5 THR 20 OUT)	1E
53 (AF IRIS IN OUT)	B9
54 (MACRO TIME OUT H)	00
55 (MACRO TIME OUT L)	00
56 (MACRO SEARCH)	00
57 (SEISHI)	02
58 (ZOOM-SPEED 1)	40
59 (ZOOM-SPEED 2)	20
5A (ZOOM-SPEED 3)	00
5B (ZOOM-SPEED 4)	53
5C	00
5D	02

Adjustment Address	Adjustment Data Initial Value
60 (IRIS REF NOR)	60
61 (IRIS REF PO)	60
62 (IRIS REF SP)	60
63 (IRIS DATA 1)	BE
64 (GAIN-REF)	30
65 (GAIN-MAX)	E0
66 (EMG AGC)	A0
67 (EMG-AGC-HYS)	05
68 (EMG-AE (H))	06
69 (EMG-AE (L))	00
6A (EMG-AE-HYS (H))	01
6B (MAX SHUT-PO (H))	00
6C (MAX SHUT-PO (L))	CE
6D (MAX SHUT-SP (H))	00
6E (MAX SHUT-SP (L))	E6
6F (REF-WIDTH (H))	01
70 (REF-WIDTH (L))	00
71 (SHUT-MULTI (H))	06
72 (SHUT-MULTI (L))	00
73 (SHUT-COUNT 1)	06
74 (SHUT STEP-MULTI)	02
75 (IRIS-OPEN)	20
76 (REF-TURBO (H))	06
77 (REF-TURBO (L))	00
78 (TURBO-WIDTH (H))	01
79 (TURBO-WIDTH (L))	00
7A (TURBO-TR (H))	01
7B (TURBO-TR (L))	00
7C (SHUT-COUNT 2)	01
7D (SHUT-COUNT 3)	01
80 (USER R-Y GAIN)	10
81 (USER B-Y GAIN)	0D
82 (USER B-Y HUE)	0D
83 (USER R-Y HUE)	0C
84 (USER SHP LEVEL)	0A
85 (USER Y LEVEL)	0C
96 (SHUTTER IN)	B1
97 (SHUTTER OUT)	8B
AC (BTM SLP R)	30
AD (BTM SLP B)	70
AE (MDL SLP R)	40
AF (MDL SLP B)	40

Adjustment Address	Adjustment Data Initial Value
B1 (TOP SLP B)	10
B2 (KEIKO R)	80
B3 (KEIKO B)	30
B4 (BTM UP)	CF
B5 (BTM DWN)	98
B6 (MDL UP)	BE
B7 (MDL DWN)	9B
BA (KEIKO)	C4
BB (KEIKO DWN)	AC
BC (R TOP LMT)	A0
C3 (B DOWN LMT)	26
C4 (LL LMT)	06
C5 (TM DIVID)	6E
C6 (BM DIVID)	41
C7 (DELAY TM)	0A
C8 (FAST TM)	30
C9 (OUT HYS OFF)	15
CA (OUT B HYS)	0D
D0 (SYSTEM)	01
EC (AWB MODE 3)	01
ED (AWB MODE 2)	00
EE (AWB MODE 1)	00

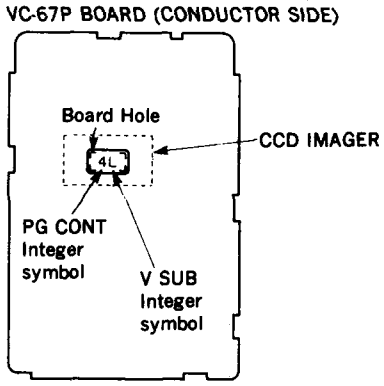
Table 4-5.

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment data for each adjustment address to the initial value with the adjustment remote control.
3) Change the adjustment address in order to memorize the last adjustment data.

4-3-6. PG CONT/V SUB Adjustment (VC-67P Board)

Note : PG CONT specified voltage and V SUB specified volatage are indicated by the two digits on CCD imager.



● PG CONT ● V SUB

Integer symbol	Voltage (V)	Integer symbol	Voltage (V)	Integer symbol	Voltage (V)	Integer symbol	Voltage (V)
0	0.5	A	7.0	J	11.0	S	15.0
1	1.0	B	7.5	K	11.5	T	15.5
2	1.5	C	8.0	L	12.0	U	16.0
3	2.0	D	8.5	M	12.5	V	16.5
4	2.5	E	9.0	N	13.0	W	17.0
5	3.0	F	9.5	P	13.5	X	17.5
6	3.5	G	10.0	Q	14.0	Y	18.0
7	4.0	H	10.5	R	14.5	Z	18.5

Example : For 「4L」 display,
•PG CONT=2.5V
•V SUB=12.0V

Fig. 4-14.

A. PG CONT Adjustment

Object	Not used
Measurement point	Checkpoint array pin (A2) (PG CONT)
Measuring instrument	Digital voltmeter
Adjustment page	F
Adjustment address	13 (PG CONT)
Specified value	(CCD imager specified voltage) $\pm 0.1V_{dc}$

[Adjustment Method]

1) Set the adjustment page F and the adjustment address 13 with the adjustment remote control.
2) Change the adjustment data to be (CCD imager specified voltage) ± 0.1Vdc with the adjustment remote control.
3) Change the adjustment address to store the adjustment data.

B. V SUB Adjustment

Object	Not used
Measurement point	Checkpoint array pin (B4) (V SUB)
Measuring equipment	Digital voltmeter
Adjustment page	F
Adjustment address	12 (V SUB)
Specified value	(CCD imager specified voltage) ±3%

[Adjustment Method]

1) Set the adjustment page F and the adjustment address 12 with the adjustment remote control.
2) Change the adjustment data to be (CCD imager specified voltage) ±3% with the adjustment remote control.
3) Change the adjustment address to store the adjustment data.

4-3-7. HALL Adjustment (AF-54P Board)

Object	All white chart All black (Put a black cap over lens)
Measurement point	CN801
Measuring instrument	AF μ COM data reader jig
Adjustment page	F
Adjustment address	1B (HALL GAIN) 1C (HALL OFFSET)
Specified value	1B : 03 1C : C or D

Change the fixed number of R1 from 10kΩ to 100kΩ in the AF microcomputer data reading jig. (If the number is kept to 10kΩ, the adjustment data can not change because of the difference of the impedance.)
When adjusting the old-model Handy Cam, 100kΩ is allowed to perform the adjustment.

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 05 with the adjustment remote controller.
3) Make all white chart in the color bar standard frame.
4) Set the adjustment address 1B and the adjustment data 20 with the adjustment remote controller. Set the adjustment address 1C and adjustment data 00.
5) Read this data of the AF microcomputer data reading jig. (Set this data as W_2 and input to the address 8B)
6) When this value is over F8, adjust the address 1C to F8± 03. Input this value of 1C to the address 87. When the value is below F8, set the data 00 of the address 87.
7) Set the adjustment address 1B and the adjustment data 00 with the adjustment remote controller.
8) Read this data of the AF microcomputer data reading jig. (Set this data as W_1 and input to the address 8A)
9) Cover the lens with black cap and make all black. (Open iris.)
10) Read this data of the AF microcomputer data reading jig. (Set this data as K_1 and input to the address 88)
11) Set the adjustment address 1B and the adjustment data 20 with the adjustment remote controller.
12) Read this data of the AF microcomputer data reading jig. (Set this data as K_2 and input to the address 89)
13) Obtain C by the following formula.

$$C=\frac{(C0+K_1-W_1)\times\triangle K+03+\triangle W}{\triangle K+\triangle W} \quad \begin{pmatrix}\triangle K=K_1-K_2\\ \triangle W=W_2-W_1\end{pmatrix}$$

14) Set the adjustment address 1B and the adjustment data 00 with the adjustment remote controller. Adjust the adjustment address 1C so that the data of the AF microcomputer data reading jig is D.
15) Set the adjustment address 1B with the adjustment remote controller. Change the adjustment data and set the data of the AF microcomputer data reading jig to 03.
16) Make all white chart in the color bar standard frame and read the data of this AF microcomputer reading jig. (Set this data as W_0 . When $W_0=C0\pm01$, the adjustment is completely performed. So set the adjustment data of the adjustment address EB to 00. When the above range is not satisfied, go to the following procedures.)
17) Obtain E by the following formula.

$$E=\frac{C0\times\triangle K+W_0\times\triangle W}{\triangle K+\triangle W} \quad \begin{pmatrix}\triangle K=K_1-K_2\\ \triangle W=W_2-W_1\end{pmatrix}$$

18) Set the adjustment address 1C with the adjustment remote controller. Change the adjustment data and set the data of the AF microcomputer data reading jig to E.
19) Set the adjustment address 1B with the adjustment remote controller. Chage the adjustment data and set the data of the AF microcomputer data reading jig to C0.
20) Cover the lens with black cap and make all black. (Open iris.)
21) Confirm that the data of the AF microcomputer data reading jig is 03±02.
22) Set the adjustment address EB and the adjustment data 00 with the adjustment remote controller.
23) Change the adjustment address in order to store the adjustment data.

4-3-8. IRIS Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement point	Checkpoint array pin (B11) (IRIS OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	19 (IRIS)
Specified value	150±10 mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 19 with the adjustment remote control.
2) With no ND filter attached, change the adjustment data with the adjustment control to adjust the IRIS OUT signal level to 150±10 mV.
3) Attach the ND filter 0.5 (0.4+0.1) in front of the lens and check that the signal level changes smoothly.
4) Remove the ND filter and check that the signal level is 150±20 mV.
5) When the specified value is not met, repeat the steps 2) through 4).
6) Change the adjustment address in order to store the adjustment data.

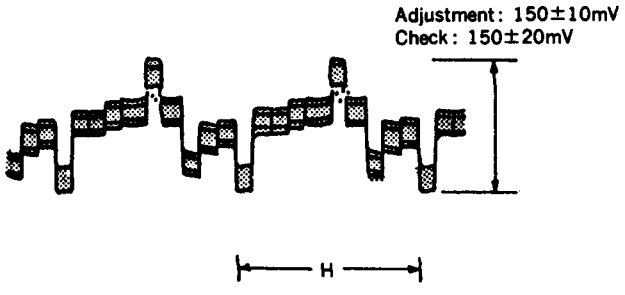


Fig. 4-15.

4-3-9. Shutter IN/OUT Adjustment (AF-54P Board)

Object	White pattern standard picture frame
Filter	ND filter: 0.4×2pcs., 0.1×1pc.
Measurement point	CN801
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	96 (SHUTTER IN) 97 (SHUTTER OUT)
Specified value	Data A Data B

[Adjustment Method]

1) Select the adjustment page F and the adjustment address EB with the adjustment remote control.
2) Attach the ND filter 0.8 (0.4+0.4) to the front of the lens, and read the AF jig data (This data is assumed as data A.)
3) Detach the ND filter 0.8, and attach the ND filter 0.5 (0.4+0.1).
4) Read the AF jig data. (This data is assumed as data B)
5) Set the adjustment address 96 by adjustment remote control and enter to the adjustment data A.
6) Set the adjustment address 97 by adjustment remote control and enter to the adjustment data B.
7) Change the adjustment address to EB to set the adjustment data to 00.
8) Change the adjustment address in order to store the adjustment data.

4-3-10. Manual Gain Data Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Filter	ND filter 2.5 (1.0+1.0+0.4+0.1)
Measurement point	CN307 pin ① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilltscope AF microcomputer data reading jig
Adjustment page	F
Adjustment address	65 (MAX GAIN) 7E 64 (GAIN REF)
Specified value	130±5mV $(D_{64}-D_{7E})<18$

Note : Although four ND filters are used, adjust with your ND filters if three or less of them make 2.5.

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 0B with the adjustment remote control.
3) Turn off the AUTO LOCK switch (FD-15P board S217.)
4) Set the manual mode with the PROGRAM AE button (FD-15P board S208).
5) Adjust to 「+15dB」 with the GAIN button (FD-15P board S211).
6) Cover the lens with the ND filter 2.5 (1.0+1.0+0.4+0.1).
7) Set the adjustment address 65 with the adjustment remote control.
8) Change the adjustment data so that the width between the center of the pedestal level and the center of the white level is 130±5mV.

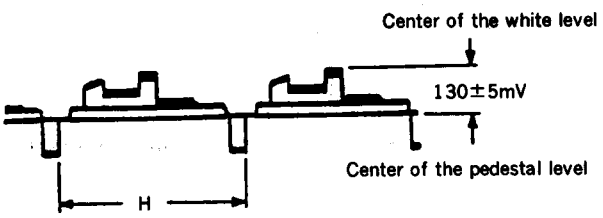


Fig. 4-16.

9) Remove the ND filter 2.5.
10) Adjust to 「−3dB」 with the GAIN button.
11) Input the value of the AF microcomputer data reading jig to the adjustment address 7E.
12) Change the adjustment address in order to store the adjustment data.

4-3-11. AGC Adjustment (VC-67P Board)

Note : When there is much noise, measure by inserting 5.6kΩ resistance.

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin (B3) (Y (LPF) OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	1A (AGC)
Specified value	180±5 mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 1A with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to set the Y (LPF) signal level to 180±5 mV.
3) Change the adjustment address in order to store the adjustment data.

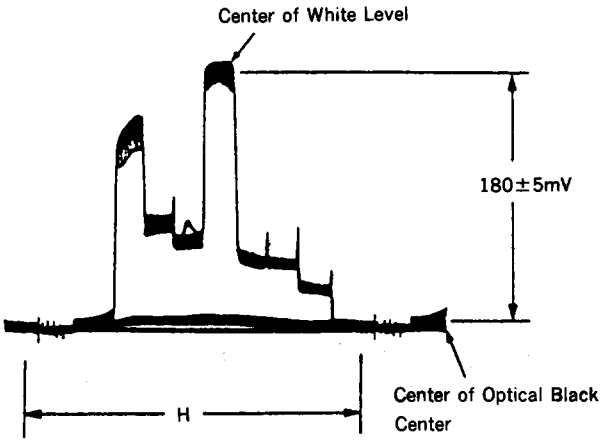


Fig. 4-17.

4-3-12. Matrix Adjustment

(1) Y1 Gain Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin(A5)(VAP OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	07 (Y_1 Gain)
Specified value	$Y_0-Y_1=0\pm5$mV

[Preparation]

1) Short the checkpoint array pin(B8)(Y_2 Gain) and pin(B5) (VAP SLICE) with GND.

[Adjustment Method]

1) Select the adjustment page F by the adjustment remote control.
2) Select the adjustment address 0F by the adjustment remote control and preset the adjustment data to be 00. (VAP GAIN : MAX)
3) Select the adjustment address 07 by the adjustment remote control.
4) Change the adjustment data and set the Y_0-Y_1 waveform to be a straight line. (There should not be difference.)
5) Change the adjustment address in order to store the adjustment data.
6) Open the checkpoint array pin(B8) and pin(B5).

Note : After the adjustment, be sure to adjust the matrix (2) Y_2 Gain Adjustment.

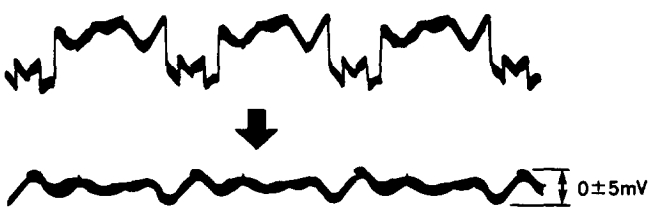


Fig. 4-18.

(2) Y_2 Gain Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin(A5)(VAP OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	06 (Y_2 GAIN)
Specified value	0±5mV

[Preparation]

1) Short the chickpoint array pin(B5) (VAP SLICE) with GND.

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjustment address 0F by the adjustment remote control and preset the adjustment data to be 00. (VAP GAIN : MAX)
3) Select the adjustment address 06 by the adjustment remote control.
4) Change the adjustment data and set the $(Y_1-\frac{Y_0+Y_2}{2})$ waveform to be a straight line. (There should not be difference.)
5) Select the adjustment address 0F by the adjustment remote control and set the adjustment data to be 90.
6) Change the adjustment address in order to store the adjustment data.
7) Open the checkpoint array pin(B5).

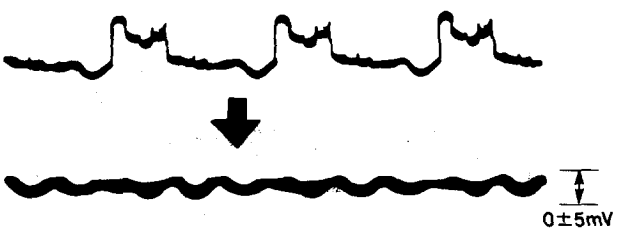


Fig. 4-19.

(3) C_I Gain Adjustment

Object	Color bar chart standard picture frame
Measurement point	VIDEO OUT terminal
Measuring instrument	Vectorscope
Adjustment page	F
Adjustment address	03 (C_I GAIN)
Specified value	Minimize the divided bright point. (Cyan, green ···Within 2.0 mm Magenta ···Within 1.0 mm Others ···Within 0.5 mm)

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 03 by the adjustment remote control.
2) Change the adjustment data to coincide each color bright point.
3) Change the adjustment address in order to store the adjustment data.

Specified Values When Vectorscope is used.
(Specified value :Cyan, Green....Within 2.0mm
Magenta....Within 1.0mm
Others....Within 0.5mm)

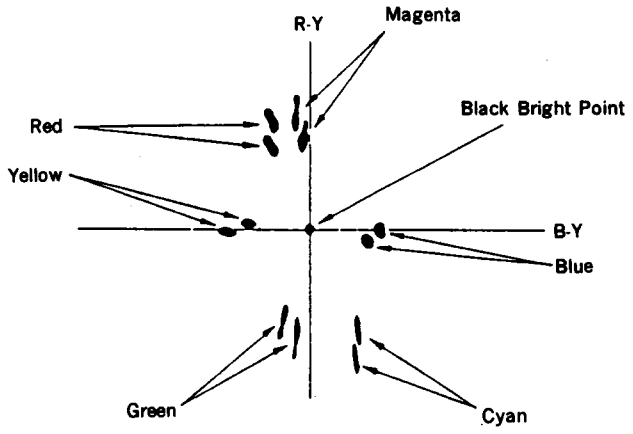


Fig. 4-20.

4-3-13. Y_H Level Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin(A6)(TP)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	08 (Y_H GAIN)
Specified value	0±5mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 08 by the adjustment remote control.
2) Change the adjustment data by the adjustment remote control in order that the output is a straght line. (There should not be difference : 0+5mV)
3) Change the adjustment address in order to store the adjustment data.

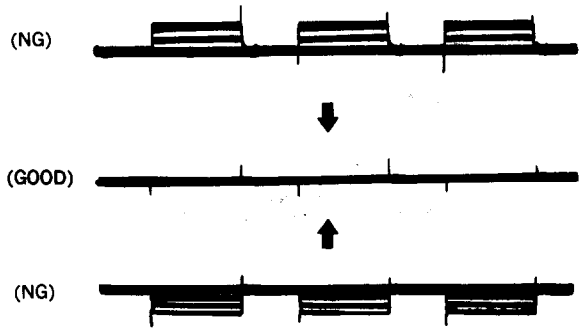


Fig. 4-21.

4-3-14. Chroma Level Adjustment (VC-67P Borad)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin (A7) (WB-G)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	11 (C LEVEL)
Specified value	320±20mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 11 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the White level to 320±20 mV.
3) Change the adjustment address in order to store the adjustment data.

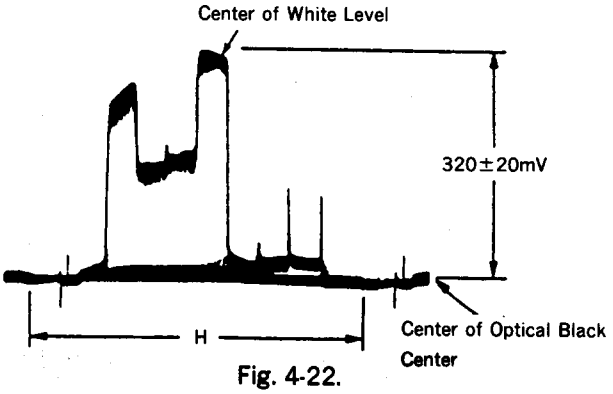


Fig. 4-22.

4-3-15. Sync. Level Adjustment (VC-67P Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN307 pin ① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	16 (SYNC LEVEL)
Specified value	150±5mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 16 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the sync. level to 150±5mV.
3) Change the adjustment address in order to store the adjustment data.

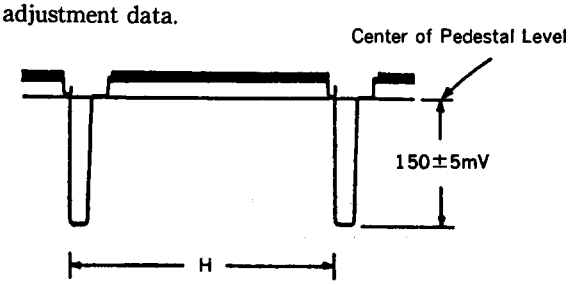


Fig. 4-23.

4-3-16. Setup Adjustment (VC-67P Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN307 pin ① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	10 (SET UP) 18 (MAX GAIN)
Specified value	15±5mV

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjustment address 18 with the adjustment remote control, make note of the adjustment data of this address (data F), and then, set the adjustment data to 00.
3) Select the adjustment address 10 with the adjustment remote control.
4) Change the adjustment data with the adjustment remote control to adjust the setup level to 15±5mV.
5) Select the adjustment address 18 and enter to the adjustment data F.
6) Change the adjustment address in order to store the adjustment data.

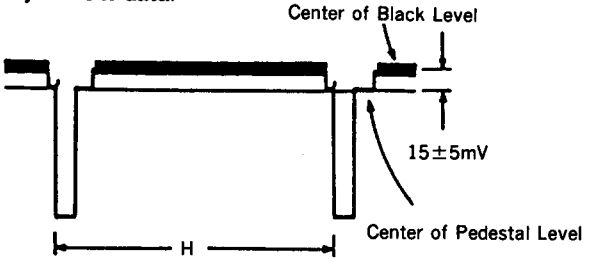


Fig. 4-24.

4-3-17. White Clip Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	15 (WC) 0E (Y LEVEL)
Specified value	420±10mV

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjutment address 0E with the adjustment remote control, make note of the adjustment data of this address (data G), and then, set the adjustment data to FF.
3) Set the adjustment address to 15 with the adjustment remote control.
4) Change the adjustment data with the adjustment remote control to adjust the white clip level to 420±10mV.
5) Select the adjustment address 0E and enter to adjustment data F.
6) Change the adjustment address in order to store the adjustment data.
7) Make Y level adjustment as described in 4-3-18.

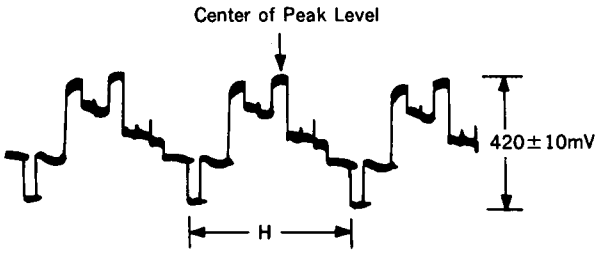


Fig. 4-25.

4-3-18. Y Level Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	0E (Y LEVEL)
Specified value	320±5mV

[Adjustment Method]

1) Check that the specified value in "4-3-17 White Clip Adjustment" is met.
2) Select the adjustment page F and the adjustment address 0E with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control and adjust the Y signal level to 320±5mV.
4) Change the adjustment address in order to store the adjusment data.

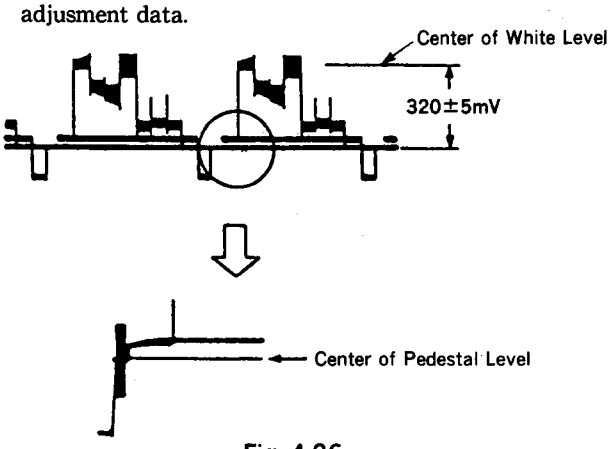


Fig. 4-26.

4-3-19. H Aperture Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	0D (SHP LEVEL)
Specified value	40±5mV

[Adjustment Method]

1) Turn the focusing ring to maximize the aperture level (waveform peak).
2) Select the adjustment page F and the adjustment address 0D with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to set the aperture level (lower peak between "green" and "white") to a point 40±5mV above the pedestal level.
4) Change the adjustment address in order to store the adjustment data.

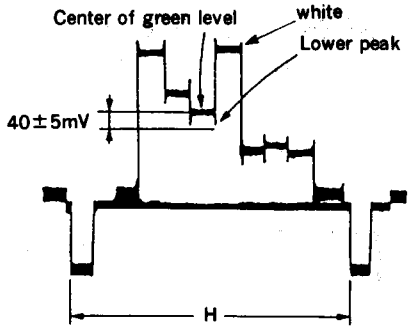


Fig. 4-27.

4-3-20. Max. Gain Adjustment (VC-67P Board)

Object	Color bar chart standard picture frame
Filter	ND filter: 1.0×2pcs., 0.4×1pc, 0.1×2pcs. each
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin (A8) (CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	18 (MAX GAIN)
Specified value	150±5mV

[Adjustment Method]

1) Cover the lens with the ND filter 2.6 (1.0+1.0+0.4+0.1+0.1).
2) Select the adjustment page F and the adjustment address 18 with the adjustment remote control.
3) Change the adjustment address with the adjustment remote control to adjust the Y signal level to 150±5mV.
4) Change the adjustment address in order to store the adjustment data.

Note: Although the ND filter is combined by using 5 pcs, if your ND filter is combined by using 3 pcs or less, resulting in 2.5, this combination should be available.

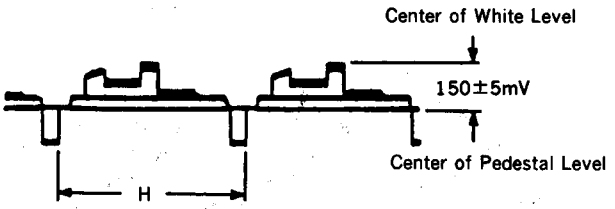


Fig. 4-28.

4-3-21. Burst Level Adjustment (VC-67P Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN307 pin ③ (C OUT) or checkpoint array pin (A10) (CAM C)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	17 (BURST LEVEL)
Specified value	150±5mVp-p

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 17 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the burst level to 150±5mVp-p.
3) Change the adjustment address in order to store the adjustment data.

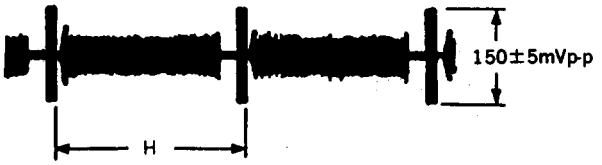


Fig. 4-29.

4-3-22. Standard AE Level Adjustment (AF-54P Board)

Object	Color bar chart standard picture frame, All black (Cover with a black cap)
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig
Adjustment page	F
Adjustment address	60 (IRIS REF-NOR) 61 (IRIS REF-PO) 62 (IRIS REF-SP)
Specified value	$(D_{60}-D_{8C})>24$ $(D_{60}-08)$

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 13 with the adjustment remote control.
3) Input the value of the AF microcomputer data reading jig to the adjustment address 60. (This adjustment data of the adjustment adress is set to D_{60})
4) Make all black. (Cover with a black cap)
5) Input the value of the AF microcomputer data reading jig to the adjustment address 8C. (This adjustment data of the adjustment address 8C is set to D_{8C})
6) Check that it is $(D_{60}-D_{8C})>24$. When the value of $(D_{60}-D_{8C})$ is between 21 and 24, set the adjustment data 76 from 71 and the adjustment data 05 from 06.
7) Input the value of $(D_{60}-08)$ to the adjustment address 61 and 62.

Example) The adjustment data D_{60} of the adjustment address 60. → The input value of the adjustment address 60 and 61.

5A	→	52
5B	→	53
5C	→	54
⋮	→	⋮

8) Set the adjustment address EB and the adjustment data 00 with the adjustment remote control.
9) Change the adjustment address in order to store the adjustment data.

4-3-23. Iris Manual Data Adjustmem (AF-54P Board)

Object	White pattern standard picture frame
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig
Adjustment page	F
Adjustment address	63 (IRIS DATA 1)
Specified value	C0±01

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 05 with the adjustment remote control.
3) Turn off the AUTO LOCK switch (FD-15P board S217).
4) Adjust to 「F8」 with the IRIS button (FD-15P board S201).
5) Change the adjustment data of the adjustment address 63 so that the value of the AF microcomputer data reading jig is C0±01.
6) Set the adjustment address EB and the adjustment data 00 with the adjustment remote control.
7) Change the adjustment address in order to store the adjustment data.

4-3-24. Warning Display Level Setting (AF-54P Board)

Object	Color bar chart standard picture frame
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig
Adjustment page	F
Adjustment address	66 (EMG AGC)

[Setting Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 0B with the adjustment remote control.
3) Turn off the AUTO LOCK switch (FD-15P board S217)
4) Adjust to 「+12dB」 with the GAIN button (FD-15P board S211).
5) Input the value of the AF microcomputer data reading jig to the adjustment address 66.
6) Set the adjustment address EB and the adjustment address 00 with the adjustment remote control.
7) Change the adjustment address in order to store the adjustment data.

4-3-25. AE Check

[Preparation]

1) Turn off the AUTO LOCK switch (FD-15P board S217.)
2) Adjust to 1/2000 with the SHUTTER SPEED button (FD-15P board S215).

Note : Be sure to check in the order of 1 → 2 → 3 → 4.

1. Portrait Mode Check (AF-54P Board)

Object	White pattern standard picture frame
Filter	ND filter 1.0
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig
Adjustment page	F
Adjustment address	8D

[Checking Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 11 with the adjustment remote control.
3) Set the portrait mode with the PROGRAM AE button (FD-15P board S208).
4) Cover the lens with the ND filter 1.0
5) After three seconds, input the value of the AF microcomputer data reading jig the adjustment address 8D.
6) Change the adjustment address in order to store the adjustment data.
7) 「Sports mode Check」 should be performed.

2. Sports Mode Check (AF-54P Board)

Object	All black (Cover the lens with a black cap)
Filter	ND filter 1.0
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig
Adjustment page	F
Adjustment address	8E
Specified value	FF

[Checking Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the sports mode with the PROGRAM AE button (FD-15P board S208).
3) Cover the lens with the ND filter 1.0
4) Cover with a black cap with the ND filter 1.0 installed.
5) After two seconds, input the value of the AF microcomputer data reading jig to the adjustment address 8E.
6) After two seconds, check that the value of the AF microcomputer data reading jig is FF.
7) Check the adjustment address in order to store the adjustment data.
8) 「3. Iris preceding mode check」 should be performed.

3. Iris Preceding Mode Check (AF-54P Board)

Object	White pattern standard picture frame All black (Cover with a black cap.)
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig and a monitor screen
Adjustment page	F
Adjustment address	8F
Specified value	When the object is all black on condition of the iris F4, the ▶ mark on the monitor screen should be flashing and the value of the AF microcomputer data reading jig should be FF.

[Checking Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the iris preceding mode with the PROGRAM AE button (FD-15P board S208).
3) Adjust to「F4」with the CONTROL switch (FD-15P board S210).
4) After two seconds, the ▶ mark on the monitor screen should not be flashing.
5) Input the value of the AF microcomputer data reading jig to the adjustment address 8F.
6) Make all black on the condition of「F4」(cover with a black cap.)
7) After two seconds, check that the ▶ mark on monitor screen is flashing.
8) Check that this value of the AF microcomputer data reading jig is FF.
9) Change the adjustment address in order to store the adjustment data.
10) 「Shutter preceding mode Check」 should be performed.

4. Shutter Preceding Mode Check (AF-54P Board)

Object	All black (Cover with a black cap.)
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig and a monitor
Adjustment page	F
Specified value	The value of the AF microcomputer data reading jig should be FF.

[Checking Method]

1) Set the adjustment page F with the adjustment remote control.
2) Make all black (cover with a black cap).
3) Set the adjustment address 8F with the adjustment remote control.
4) Set the shutter preceding mode with the PROGRAM AE button (FD-15P board S208).
5) Check that the value of the AF microcomputer data reading jig is FF.
6) Check that the ▶ mark on the monitor screen is not flashing.

Note : After checking AE, set the adjustment address EB and the adjustment data 00. (Change the adjustment address in order to store the adjustment data.)

4-3-26 (A). Pre-white Balance Adjustment (With Vectorscope)

Object	All white pattern
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Adjustment page	F
Adjustment address	05 (R GAIN) 04 (B GAIN)
Specified value	The center of a white bright point must be within a circle of ϕ 1 mm centering around the origin

[Adjustment Method]

1) Maximize the gain of vectorscope.
2) Select the adjustment page F and the adjustment address 05 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to coincide the white bright point with the origin.
4) Select the adjustment address 04.
5) Change the adjustment data to coincide the white bright point with the origin.
6) Repeat the steps 2) through 5).
7) Return the gain of vectorscope to CAL, and make sure that center of the bright point is located inside a circle of 1 mm diameter apart from the origin.
8) Change the adjustment address in order to store the adjustment data.

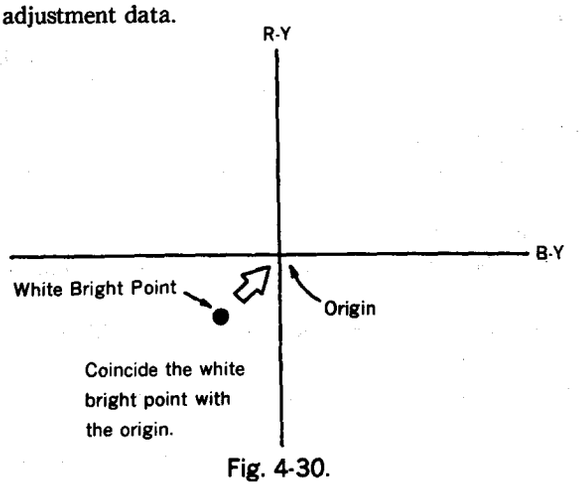


Fig. 4-30.

4-3-26 (B). Pre-white Balance Adjustment (With Oscilloscope) (VC-67P Board)

Object	All white pattern
Measurement point	CN307 pin ③ (C OUT) or checkpoint array pin A10 (CAM C)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	05 (R GAIN) 04 (B GAIN)
Specified value	Chroma signal amplitude minimum

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 05 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to minimize a chroma signal amplitude.
3) Select the adjustment address 04.
4) Change the adjustment data to minimize the chroma signal amplitude.
5) Repeat the steps 1) through 4).
6) Change the adjustment address in order to store the adjustment data.

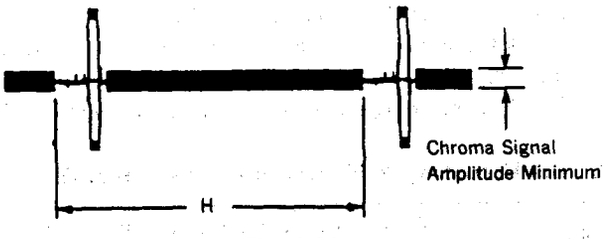


Fig. 4-31.

4-3-27. Color Reproducibility Adjustment (With Vectorscope)

Object	Color bar chart standard picture frame
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Adjustment page	F
Adjustment address	09 (R-Y GAIN) 0A (B-Y GAIN) 0B (R-Y HUE) 0C (B-Y HUE)
Specified value	All color bright points must be within a color reproduction frame.

Note : Burst level adjustment and pre-white balance adjustment must have been completed.

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Change the adjustment data of each adjustment address with the adjustment remote control to collect all the color bright points within the color reproduction frame.
3) Change the adjustment address in order to store the adjustment data.

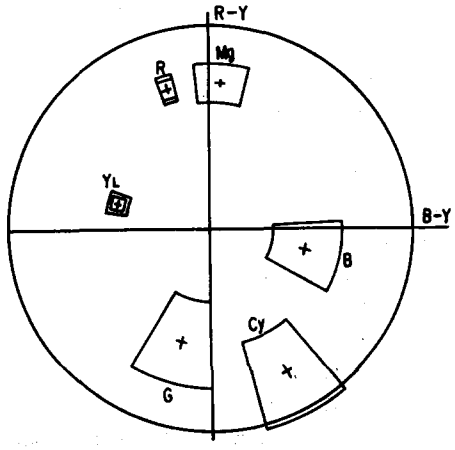


Fig. 4-32.

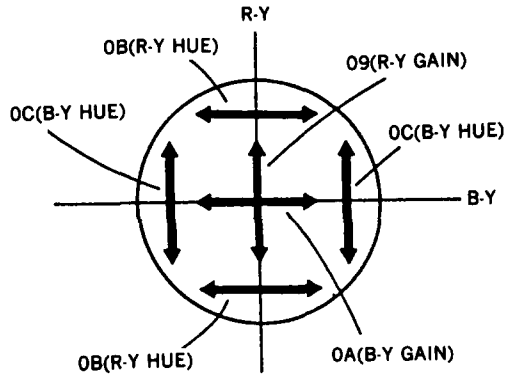


Fig. 4-33. Adjustment Addresses and Bright Point Moving Directions

4-3-28. Auto White Balance Adjustment

Note 1 : Be sure to make "preset adjustment" and "auto white balance adjustment" in that order.

(1) Preset Adjustment (VC-67P Board)

Object	White pattern standard picture frame
Adjustment page	F
Adjustment address	EE (AWB MODE 1)

Note 1 : Make preset adjustment 30 seconds or more after turning on the power.

Note 2 : When redoing preset adjustment, turn off the power once, and then, turn it on again.

[Adjustment Method]

1) Turn off/on the power.
2) Obtain a picture of white pattern for over five seconds. (AF switch is turned off.)
3) Select the adjustment page F with the adjustment remote control.
4) Select the adjustment address EE by the adjustment remote control and set the adjustment data to be 01.
5) Change the adjustment address in order to store the adjustment data. (3200K data fetch 1)
6) Select the adjustment address EE by the adjustment remote control and set the adjustment data to be 23.
7) Change the adjustment address in order to store the adjustment data. (3200K data fetch 2)
8) Check that the LANC data is changed and the adjustment address 95 is selected.
9) Select the adjustment address EE by the adjustment remote control and set the adjustment data to be 00.
10) Change the adjustment address in order to store the adjustment data.
11) Make auto white balance adjustment.

(2) Auto White Balance Adjustment (VC-67P Board)

Note 1 :Be sure to make this adjustment after preset adjustment.

Object	All white pattern
Filter	Color temperature compensation filter C14 (C12+C2)
Measuring instrument	Vectorscope
Measurement point	VIDEO OUT terminal
Adjustment page	F
Adjustment address	01 (R CONT) 02 (B CONT) 98 (START R) 99 (START B) 9A (R OUT DOOR) 9B (B OUT DOOR) A0 (Ra) A1 (Rb) A2 (Rc) A3 (Ba) A4 (Bb) A5 (Bc) A6 (R/B TOP) A7 (R/B MDL) A8 (R/B BTM) A9 (B/R TOP) AA (B/R MDL) AB (B/R BTM) B0 (TOP SLP R) B8 (TOP UP) B9 (TOP DWN) BD (R DWN LMT) BE (B DWN LMT) BF (B IN TOP) C0 (B IN MAX) C1 (B OUT MIN) C2 (B OUT DWN)
Specified value	The white and black bright points must coincide.

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjustment address EE (AWB MODE1) with the adjustment remote control and enter the adjustment data 10. (Set of WB DIRECT)
3) Cover the lens with the C14 filter.
4) Change the adjustment data of the adjustment addresses 01 and 02 with the adjustment remote control to coincide the white bright point with the origin.
   At this time, assume the data of the adjustment address 01 as Rc14 and that of the adjustment address 02 as Bc14.
5) Input the value on the AWB adjustment data list (Refer to page 49) from the value of Rc14 and Bc14 to each address, and then proceed to the item 16). If the value does not come under the list, caluculate the adjustment data by the calculation from item 6).
6) Make that the adjustment address 01 data of the adjustment remote control on the item 4) is C1 and the adjustment address 02 data is C2.
7) Convert C_1 into a decimal number to assume it as C_1', and C_2 as well as C_2'. (Refer to Table 4-4 "Hexadecimal-Decimal Conversion Table")
8) Obtain D_{9A}' anb D_{9B}' by the following formula.
   $D_{9A}'=C_1'+2 \qquad D_{9B}'=C_2'+6$
9) Convert D_{9A}' and D_{9B}' into a hexadecimal number and assume its value as D_{9A} and D_{9B}. (Round fractions below a decimal number to the nearest whole number)
10) Select the adjustment address 9A and enter the adjustment data D_{9A}.
11) Select the adjustment address 9B and enter the adjustment data D_{9B}.
12) Obtain A and B in the hexadecimal numbers by the following formula, and convert them into the decimal numbers. The values are A′ and B′.
    $A=5A-D_{9A}$
    $B=D_{9B}-50$
13) Obtain the adjustment data of each adjustment address in the decimal numbers by the following formula.
    $D_{A0}'=90-A'\times1.12$
    $D_{A1}'=D_{9A}'$
    $D_{A2}'=90-A'\times0.593$
    $D_{98}'=D_{A2}'$
    $D_{BE}'=B'\times2+80$
    $D_{BF}'=D_{9B}'$
    $D_{C0}'=B'\times0.84+80$
    $D_{C1}'=D_{C0}'$
    $D_{C2}'=B'\times0.3+80$
    $D_{A3}'=B'\times1.34+80$
    $D_{99}'=D_{A5}'$
    $D_{A4}'=D_{9B}'$
    $D_{A5}'=B\times0.467+80$
    $D_{BD}=90-A'\times1.67$
14) The above items, calculate by decimal and input by hexadecimal.

15) The below items, calculate by hexadecimal and input the adjustment data to each adjustment address.

$$D_{A6}=\frac{(D_{A1}-D_{A0})\times 40}{(D_{A3}-D_{A4})}$$

$$D_{A7}=\frac{(D_{A2}-D_{A1})\times 40}{(D_{A4}-D_{A5})}$$

$$D_{A8}=\frac{(5A-D_{A2})\times 40}{(D_{A5}-50)}$$

$$D_{A9}=\frac{(D_{A3}-D_{A4})\times 10}{(D_{A1}-D_{A0})}$$

$$D_{AA}=\frac{(D_{A4}-D_{A5})\times 10}{(D_{A2}-D_{A1})}$$

$$D_{AB}=\frac{(D_{A5}-50)\times 10}{(5A-D_{A1})}$$

$$D_{B0}=D_{A9}$$

$$D_{B8}=\frac{(D_{A1}+0A)\times D_{B0}+D_{A4}\times 10}{40}$$

$$D_{B9}=\frac{(D_{A1}-11)\times D_{B0}+D_{A4}\times 10}{40}$$

16) Select the adjustment address EE and input the adjsutment data F0.
17) Change the adjustment addresses 01 and 02 with the adjustment remote control to coincide the white bright point with the origin.
18) Select the adjustment address EE and enter the adjustment data 00.
19) Change the adjustment address in order to store the adjustment data.

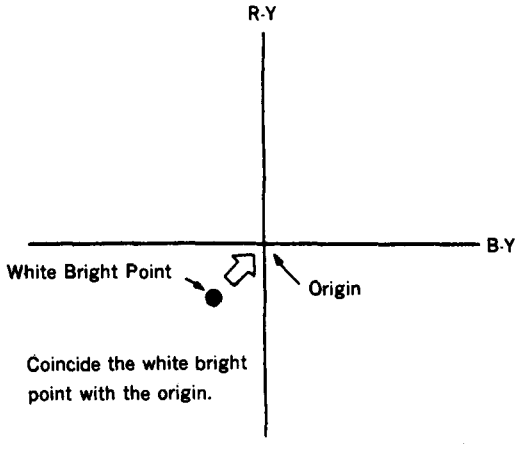


Fig. 4-34.

•AWB Adjustment Data Table

Rc14;Bc14	adr98	99	9A	9B	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	B0	B8	B9	BD	BE	BF	C0	C1	C2
3D 78		4A	65	3F	7E	3C	3F	4A	8E	7E	65	C	1C	31	55	24	15	55	81	5D	2C	AC	7E	77	77	5E
3D 79		4A	66	3F	7F	3C	3F	4A	8F	7F	66	C	1C	2F	55	24	16	55	81	5D	2C	AE	7F	77	77	5E
3D 7A		4A	66	3F	80	3C	3F	4A	90	80	66	C	1B	2F	55	26	16	55	81	5D	2C	B0	80	78	78	5E
3D 7B		4A	67	3F	81	3C	3F	4A	92	81	67	B	1B	2D	5B	26	17	5B	88	61	2C	B2	81	79	79	5F
3D 7C		4A	67	3F	82	3C	3F	4A	93	82	67	B	1A	2D	5B	27	17	5B	88	62	2C	B4	82	7A	7A	5F
3D 7D		4A	68	3F	83	3C	3F	4A	94	83	68	B	1A	2B	5B	27	18	5B	88	62	2C	B6	83	7B	7B	5F
3D 7E		4A	68	3F	84	3C	3F	4A	96	84	68	B	19	2B	60	29	18	60	8F	66	2C	B8	84	7C	7C	60
3D 7F		4A	69	3F	85	3C	3F	4A	97	85	69	B	19	29	60	29	19	60	8F	66	2C	BA	85	7D	7D	60
3D 80		4A	69	3F	86	3C	3F	4A	98	86	69	B	18	29	60	2A	19	60	8F	67	2C	BC	86	7D	7D	60
3D 81		4A	6A	3F	87	3C	3F	4A	9A	87	6A	A	18	27	65	2A	1A	65	95	6B	2C	BE	87	7E	7E	61
3D 82		4A	6A	3F	88	3C	3F	4A	9B	88	6A	A	17	27	65	2C	1A	65	96	6B	2C	C0	88	7F	7F	61
3D 83		4A	6B	3F	89	3C	3F	4A	9C	89	6B	A	17	26	65	2C	1B	65	96	6B	2C	C2	89	80	80	61
3D 84		4A	6B	3F	8A	3C	3F	4A	9E	8A	6B	A	17	26	6B	2D	1B	6B	9C	6F	2C	C4	8A	81	81	61
3D 85		4A	6C	3F	8B	3C	3F	4A	9F	8B	6C	A	17	25	6B	2D	1C	6B	9C	6F	2C	C6	8B	82	82	62
3D 86		4A	6C	3F	8C	3C	3F	4A	A0	8C	6C	A	16	25	6B	2F	1C	6B	9D	70	2C	C8	8C	82	82	62
3D 87		4A	6C	3F	8D	3C	3F	4A	A2	8D	6C	9	15	25	70	30	1C	70	A3	74	2C	CA	8D	83	83	62
3D 88		4A	6D	3F	8E	3C	3F	4A	A3	8E	6D	9	15	23	70	30	1D	70	A3	74	2C	CC	8E	84	84	63
3D 89		4A	6D	3F	8F	3C	3F	4A	A4	8F	6D	9	15	23	70	31	1D	70	A4	74	2C	CE	8F	85	85	63
3D 8A		4A	6E	3F	90	3C	3F	4A	A6	90	6E	9	15	22	75	31	1E	75	AA	78	2C	D0	90	86	86	63
3D 8B		4A	6E	3F	91	3C	3F	4A	A7	91	6E	9	14	22	76	33	1E	75	AA	79	2C	D2	91	87	87	64
3E 78		4B	65	40	7E	3D	40	4B	8E	7E	65	C	1C	2E	55	24	16	55	82	5E	2E	AC	7E	77	77	5E
3E 79		4B	66	40	7F	3D	40	4B	8F	7F	66	C	1C	2C	55	24	17	55	82	5E	2E	AE	7F	77	77	5E
3E 7A		4B	66	40	80	3D	40	4B	90	80	66	C	1B	2C	55	26	17	55	83	5F	2E	B0	80	78	78	5E
3E 7B		4B	67	40	81	3D	40	4B	92	81	67	B	1B	2A	5B	26	19	5B	89	63	2E	B2	81	79	79	5F
3E 7C		4B	67	40	82	3D	40	4B	93	82	67	B	1A	2A	5B	27	19	5B	89	63	2E	B4	82	7A	7A	5F
3E 7D		4B	68	40	83	3D	40	4B	94	83	68	B	1A	28	5B	27	1A	5B	8A	63	2E	B6	83	7B	7B	5F
3E 7E		4B	68	40	84	3D	40	4B	96	84	68	B	19	28	60	29	1A	60	90	68	2E	B8	84	7C	7C	60
3E 7F		4B	69	40	85	3D	40	4B	97	85	69	B	19	26	60	29	1B	60	90	68	2E	BA	85	7D	7D	60
3E 80		4B	69	40	86	3D	40	4B	98	86	69	B	18	26	60	2A	1B	60	91	68	2E	BC	86	7D	7D	60
3E 81		4B	6A	40	87	3D	40	4B	9A	87	6A	A	18	25	65	2A	1C	65	97	6C	2E	BE	87	7E	7E	61
3E 82		4B	6A	40	88	3D	40	4B	9B	88	6A	A	17	25	65	2C	1C	65	97	6C	2E	C0	88	7F	7F	61
3E 83		4B	6B	40	89	3D	40	4B	9C	89	6B	A	17	24	65	2C	1D	65	97	6D	2E	C2	89	80	80	61
3E 84		4B	6B	40	8A	3D	40	4B	9E	8A	6B	A	17	24	6B	2D	1D	6B	9E	71	2E	C4	8A	81	81	61
3E 85		4B	6C	40	8B	3D	40	4B	9F	8B	6C	A	17	22	6B	2D	1E	6B	9E	71	2E	C6	8B	82	82	62
3E 86		4B	6C	40	8C	3D	40	4B	A0	8C	6C	A	16	22	6B	2F	1E	6B	9E	71	2E	C8	8C	82	82	62
3E 87		4B	6C	40	8D	3D	40	4B	A2	8D	6C	9	15	22	70	30	1E	70	A5	76	2E	CA	8D	83	83	62
3E 88		4B	6D	40	8E	3D	40	4B	A3	8E	6D	9	15	21	70	30	1F	70	A5	76	2E	CC	8E	84	84	63
3E 89		4B	6D	40	8F	3D	40	4B	A4	8F	6D	9	15	21	70	31	1F	70	A5	76	2E	CE	8F	85	85	63
3E 8A		4B	6E	40	90	3D	40	4B	A6	90	6E	9	15	20	75	31	20	75	AC	7A	2E	D0	90	86	86	63
3E 8B		4B	6E	40	91	3D	40	4B	A7	91	6E	9	14	20	75	33	20	75	AC	7A	2E	D2	91	87	87	64
3F 78		4B	65	41	7E	3E	41	4B	8E	7E	65	C	1A	2E	55	28	16	55	84	60	30	AC	7E	77	77	5E
3F 79		4B	66	41	7F	3E	41	4B	8F	7F	66	C	1A	2C	55	28	17	55	84	60	30	AE	7F	77	77	5E
3F 7A		4B	66	41	80	3E	41	4B	90	80	66	C	19	2C	55	2A	17	55	84	60	30	B0	80	78	78	5E
3F 7B		4B	67	41	81	3E	41	4B	92	81	67	B	19	2A	5B	2A	19	5B	8B	64	30	B2	81	79	79	5F
3F 7C		4B	67	41	82	3E	41	4B	93	82	67	B	18	2A	5B	2B	19	5B	8B	65	30	B4	82	7A	7A	5F
3F 7D		4B	68	41	83	3E	41	4B	94	83	68	B	18	28	5B	2B	1A	5B	8B	65	30	B6	83	7B	7B	5F
3F 7E		4B	68	41	84	3E	41	4B	96	84	68	B	17	28	60	2D	1A	60	92	69	30	B8	84	7C	7C	60
3F 7F		4B	69	41	85	3E	41	4B	97	85	69	B	17	26	60	2D	1B	60	92	69	30	BA	85	7D	7D	60
3F 80		4B	69	41	86	3E	41	4B	98	86	69	B	16	26	60	2E	1B	60	92	6A	30	BC	86	7D	7D	60
3F 81		4B	6A	41	87	3E	41	4B	9A	87	6A	A	16	25	65	2E	1C	65	99	6E	30	BE	87	7E	7E	61
3F 82		4B	6A	41	88	3E	41	4B	9B	88	6A	A	15	25	65	30	1C	65	99	6E	30	C0	88	7F	7F	61
3F 83		4B	6B	41	89	3E	41	4B	9C	89	6B	A	15	24	65	30	1D	65	99	6E	30	C2	89	80	80	61
3F 84		4B	6B	41	8A	3E	41	4B	9E	8A	6B	A	15	24	6B	32	1D	6B	A0	73	30	C4	8A	81	81	61
3F 85		4B	6C	41	8B	3E	41	4B	9F	8B	6C	A	15	22	6B	32	1E	6B	A0	73	30	C6	8B	82	82	62

Rc14	Bc14	adr98	99	9A	9B	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	B0	B8	B9	BD	BE	BF	C0	C1	C2
3F	86		4D	6C	41	8C	3E	41	4B	A0	8C	6C	A	14	22	6B	33	1E	6B	A0	73	30	C8	8C	82	82	62
3F	87		4B	6C	41	8D	3E	41	4B	A2	8D	6C	9	13	22	70	35	1E	70	A7	77	30	CA	8D	83	83	62
3F	88		4B	6D	41	8E	3E	41	4B	A3	8E	6D	9	13	21	70	35	1F	70	A7	78	30	CC	8E	84	84	63
3F	89		4B	6D	41	8F	3E	41	4B	A4	8F	6D	9	13	21	70	36	1F	70	A7	78	30	CE	8F	85	85	63
3F	8A		4B	6E	41	90	3E	41	4B	A6	90	6E	9	13	20	75	36	20	75	AE	7C	30	D0	90	86	86	63
3F	8B		4B	6E	41	91	3E	41	4B	A7	91	6E	9	12	20	75	38	20	75	AE	7C	30	D2	91	87	87	64
40	78		4C	65	42	7E	3F	42	4C	8E	7E	65	C	1A	2B	55	28	18	55	85	61	31	AC	7E	77	77	5E
40	79		4C	66	42	7F	3F	42	4C	8F	7F	66	C	1A	29	55	28	19	55	85	61	31	AE	7F	77	77	5E
40	7A		4C	66	42	80	3F	42	4C	90	80	66	C	19	29	55	2A	19	55	85	61	31	B0	80	78	78	5E
40	7B		4C	67	42	81	3F	42	4C	92	81	67	B	19	27	5B	2A	1A	5B	8C	66	31	B2	81	79	79	5F
40	7C		4C	67	42	82	3F	42	4C	93	82	67	B	18	27	5B	2B	1A	5B	8C	66	31	B4	82	7A	7A	5F
40	7D		4C	68	42	83	3F	42	4C	94	83	68	B	18	25	5B	2B	1B	5B	8C	66	31	B6	83	7B	7B	5F
40	7E		4C	68	42	84	3F	42	4C	96	84	68	B	17	25	60	2D	1B	60	93	6B	31	B8	84	7C	7C	60
40	7F		4C	69	42	85	3F	42	4C	97	85	69	B	17	24	60	2D	1D	60	93	6B	31	BA	85	7D	7D	60
40	80		4C	69	42	86	3F	42	4C	98	86	69	B	16	24	60	2E	1D	60	94	6B	31	BC	86	7D	7D	60
40	81		4C	6A	42	87	3F	42	4C	9A	87	6A	A	16	22	65	2E	1E	65	9A	6F	31	BE	87	7E	7E	61
40	82		4C	6A	42	88	3F	42	4C	9B	88	6A	A	15	22	65	30	1E	65	9A	70	31	C0	88	7F	7F	61
40	83		4C	6B	42	89	3F	42	4C	9C	89	6B	A	15	21	65	30	1F	65	9B	70	31	C2	89	80	80	61
40	84		4C	6B	42	8A	3F	42	4C	9E	8A	6B	A	15	21	6B	32	1F	6B	A1	74	31	C4	8A	81	81	61
40	85		4C	6C	42	8B	3F	42	4C	9F	8B	6C	A	15	20	6B	32	20	6B	A1	74	31	C6	8B	82	82	62
40	86		4C	6C	42	8C	3F	42	4C	A0	8C	6C	A	14	20	6B	33	20	6B	A2	75	31	C8	8C	82	82	62
40	87		4C	6C	42	8D	3F	42	4C	A2	8D	6C	9	13	20	70	35	20	70	A8	79	31	CA	8D	83	83	62
40	88		4C	6D	42	8E	3F	42	4C	A3	8E	6D	9	13	1F	70	35	21	70	A9	79	31	CC	8E	84	84	63
40	89		4C	6D	42	8F	3F	42	4C	A4	8F	6D	9	13	1F	70	36	21	70	A9	7A	31	CE	8F	85	85	63
40	8A		4C	6E	42	90	3F	42	4C	A6	90	6E	9	13	1E	75	36	22	75	AF	7E	31	D0	90	86	86	63
40	8B		4C	6E	42	91	3F	42	4C	A7	91	6E	9	12	1E	75	38	22	75	B0	7E	31	D2	91	87	87	64
41	78		4C	65	43	7E	40	43	4C	8E	7E	65	C	17	2B	55	2C	18	55	86	62	33	AC	7E	77	77	5E
41	79		4C	66	43	7F	40	43	4C	8F	7F	66	C	17	29	55	2C	19	55	86	62	33	AE	7F	77	77	5E
41	7A		4C	66	43	80	40	43	4C	90	80	66	C	16	29	55	2E	19	55	87	63	33	B0	80	78	78	5E
41	7B		4C	67	43	81	40	43	4C	92	81	67	B	16	27	5B	2E	1A	5B	8D	67	33	B2	81	79	79	5F
41	7C		4C	67	43	82	40	43	4C	93	82	67	B	15	27	5B	30	1A	5B	8E	67	33	B4	82	7A	7A	5F
41	7D		4C	68	43	83	40	43	4C	94	83	68	B	15	25	5B	30	1B	5B	8E	68	33	B6	83	7B	7B	5F
41	7E		4C	68	43	84	40	43	4C	96	84	68	B	15	25	60	32	1B	60	95	6C	33	B8	84	7C	7C	60
41	7F		4C	69	43	85	40	43	4C	97	85	69	B	15	24	60	32	1D	60	95	6C	33	BA	85	7D	7D	60
41	80		4C	69	43	86	40	43	4C	98	86	69	B	14	24	60	34	1D	60	95	6D	33	BC	86	7D	7D	60
41	81		4C	6A	43	87	40	43	4C	9A	87	6A	A	14	22	65	34	1E	65	9C	71	33	BE	87	7E	7E	61
41	82		4C	6A	43	88	40	43	4C	9B	88	6A	A	13	22	65	35	1E	65	9C	71	33	C0	88	7F	7F	61
41	83		4C	6B	43	89	40	43	4C	9C	89	6B	A	13	21	65	35	1F	65	9C	71	33	C2	89	80	80	61
41	84		4C	6B	43	8A	40	43	4C	9E	8A	6B	A	13	21	6B	37	1F	6B	A3	76	33	C4	8A	81	81	61
41	85		4C	6C	43	8B	40	43	4C	9F	8B	6C	A	13	20	6B	37	20	6B	A3	76	33	C6	8B	82	82	62
41	86		4C	6C	43	8C	40	43	4C	A0	8C	6C	A	12	20	6B	39	20	6B	A3	76	33	C8	8C	82	82	62
41	87		4C	6C	43	8D	40	43	4C	A2	8D	6C	9	11	20	70	3B	20	70	AA	7B	33	CA	8D	83	83	62
41	88		4C	6D	43	8E	40	43	4C	A3	8E	6D	9	11	1F	70	3B	21	70	AA	7B	33	CC	8E	84	84	63
41	89		4C	6D	43	8F	40	43	4C	A4	8F	6D	9	11	1F	70	3C	21	70	AB	7B	33	CE	8F	85	85	63
41	8A		4C	6E	43	90	40	43	4C	A6	90	6E	9	11	1E	75	3C	22	75	B1	80	33	D0	90	86	86	63
41	8B		4C	6E	43	91	40	43	4C	A7	91	6E	9	10	1E	75	3E	22	75	B1	80	33	D2	91	87	87	64
42	78		4D	65	44	7E	41	44	4D	8E	7E	65	C	17	28	55	2C	1A	55	88	64	35	AC	7E	77	77	5E
42	79		4D	66	44	7F	41	44	4D	8F	7F	66	C	17	26	55	2C	1B	55	88	64	35	AE	7F	77	77	5E
42	7A		4D	66	44	80	41	44	4D	90	80	66	C	16	26	55	2E	1B	55	88	64	35	B0	80	78	78	5E
42	7B		4D	67	44	81	41	44	4D	92	81	67	B	16	24	5B	2E	1C	5B	8F	69	35	B2	81	79	79	5F
42	7C		4D	67	44	82	41	44	4D	93	82	67	B	15	24	5B	30	1C	5B	8F	69	35	B4	82	7A	7A	5F
42	7D		4D	68	44	83	41	44	4D	94	83	68	B	15	23	5B	30	1E	5B	8F	69	35	B6	83	7B	7B	5F
42	7E		4D	68	44	84	41	44	4D	96	84	68	B	15	23	60	32	1E	60	96	6E	35	B8	84	7C	7C	60
42	7F		4D	69	44	85	41	44	4D	97	85	69	B	15	21	60	32	1F	60	96	6E	35	BA	85	7D	7D	60

Rc14;Bc14	adr98	99	9A	9B	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	B0	B8	B9	BD	BE	BF	C0	C1	C2
42 80	4D	69	44	86	41	44	4D	98	86	69	B	14	21	60	34	1F	60	97	6E	35	BC	86	7D	7D	60
42 81	4D	6A	44	87	41	44	4D	9A	87	6A	A	14	20	65	34	20	65	9D	73	35	BE	87	7E	7E	61
42 82	4D	6A	44	88	41	44	4D	9B	88	6A	A	13	20	65	35	20	65	9E	73	35	C0	88	7F	7F	61
42 83	4D	6B	44	89	41	44	4D	9C	89	6B	A	13	1F	65	35	21	65	9E	73	35	C2	89	80	80	61
42 84	4D	6B	44	8A	41	44	4D	9E	8A	6B	A	13	1F	6B	37	21	6B	A5	78	35	C4	8A	81	81	61
42 85	4D	6C	44	8B	41	44	4D	9F	8B	6C	A	13	1E	6B	37	22	6B	A5	78	35	C6	8B	82	82	62
42 86	4D	6C	44	8C	41	44	4D	A0	8C	6C	A	12	1E	6B	39	22	6B	A5	78	35	C8	8C	82	82	62
42 87	4D	6C	44	8D	41	44	4D	A2	8D	6C	9	11	1E	70	3B	22	70	AC	7D	35	CA	8D	83	83	62
42 88	4D	6D	44	8E	41	44	4D	A3	8E	6D	9	11	1D	70	3B	24	70	AC	7D	35	CC	8E	84	84	63
42 89	4D	6D	44	8F	41	44	4D	A4	8F	6D	9	11	1D	70	3C	24	70	AC	7D	35	CE	8F	85	85	63
42 8A	4D	6E	44	90	41	44	4D	A6	90	6E	9	11	1C	75	3C	25	75	B3	82	35	D0	90	86	86	63
42 8B	4D	6E	44	91	41	44	4D	A7	91	6E	9	10	1C	75	3E	25	75	B3	82	35	D2	91	87	87	64
43 78	4E	65	45	7E	42	45	4E	8E	7E	65	C	17	25	55	2C	1C	55	89	65	36	AC	7E	77	77	5E
43 79	4E	66	45	7F	42	45	4E	8F	7F	66	C	17	23	55	2C	1D	55	89	65	36	AE	7F	77	77	5E
43 7A	4E	66	45	80	42	45	4E	90	80	66	C	16	23	55	2E	1D	55	89	65	36	B0	80	78	78	5E
43 7B	4E	67	45	81	42	45	4E	92	81	67	B	16	21	5B	2E	1F	5B	90	6A	36	B2	81	79	79	5F
43 7C	4E	67	45	82	42	45	4E	93	82	67	B	15	21	5B	30	1F	5B	90	6A	36	B4	82	7A	7A	5F
43 7D	4E	68	45	83	42	45	4E	94	83	68	B	15	20	5B	30	20	5B	91	6A	36	B6	83	7B	7B	5F
43 7E	4E	68	45	84	42	45	4E	96	84	68	B	15	20	60	32	20	60	98	6F	36	B8	84	7C	7C	60
43 7F	4E	69	45	85	42	45	4E	97	85	69	B	15	1F	60	32	21	60	98	6F	36	BA	85	7D	7D	60
43 80	4E	69	45	86	42	45	4E	98	86	69	B	14	1F	60	34	21	60	98	70	36	BC	86	7D	7D	60
43 81	4E	6A	45	87	42	45	4E	9A	87	6A	A	14	1E	65	34	23	65	9F	74	36	BE	87	7E	7E	61
43 82	4E	6A	45	88	42	45	4E	9B	88	6A	A	13	1E	65	35	23	65	9F	74	36	C0	88	7F	7F	61
43 83	4E	6B	45	89	42	45	4E	9C	89	6B	A	13	1C	65	35	24	65	9F	75	36	C2	89	80	80	61
43 84	4E	6B	45	8A	42	45	4E	9E	8A	6B	A	13	1C	6B	37	24	6B	A6	79	36	C4	8A	81	81	61
43 85	4E	6C	45	8B	42	45	4E	9F	8B	6C	A	13	1B	6B	37	25	6B	A6	79	36	C6	8B	82	82	62
43 86	4E	6C	45	8C	42	45	4E	A0	8C	6C	A	12	1B	6B	39	25	6B	A7	7A	36	C8	8C	82	82	62
43 87	4E	6C	45	8D	42	45	4E	A2	8D	6C	9	11	1B	70	3B	25	70	AE	7E	36	CA	8D	83	83	62
43 88	4E	6D	45	8E	42	45	4E	A3	8E	6D	9	11	1A	70	3B	27	70	AE	7F	36	CC	8E	84	84	63
43 89	4E	6D	45	8F	42	45	4E	A4	8F	6D	9	11	1A	70	3C	27	70	AE	7F	36	CE	8F	85	85	63
43 8A	4E	6E	45	90	42	45	4E	A6	90	6E	9	11	1A	75	3C	28	75	B5	83	36	D0	90	86	86	63
43 8B	4E	6E	45	91	42	45	4E	A7	91	6E	9	10	1A	75	3E	28	75	B5	84	36	D2	91	87	87	64
44 78	4E	65	46	7E	44	46	4E	8E	7E	65	8	14	25	80	32	1C	80	C0	8A	38	AC	7E	77	77	5E
44 79	4E	66	46	7F	44	46	4E	8F	7F	66	8	14	23	80	32	1D	80	C0	8A	38	AE	7F	77	77	5E
44 7A	4E	66	46	80	44	46	4E	90	80	66	8	14	23	80	34	1D	80	C0	8A	38	B0	80	78	78	5E
44 7B	4E	67	46	81	44	46	4E	92	81	67	8	14	21	88	34	1F	88	CA	91	38	B2	81	79	79	5F
44 7C	4E	67	46	82	44	46	4E	93	82	67	8	13	21	88	36	1F	88	CB	91	38	B4	82	7A	7A	5F
44 7D	4E	68	46	83	44	46	4E	94	83	68	8	13	20	88	36	20	88	CB	91	38	B6	83	7B	7B	5F
44 7E	4E	68	46	84	44	46	4E	96	84	68	7	12	20	90	38	20	90	D5	98	38	B8	84	7C	7C	60
44 7F	4E	69	46	85	44	46	4E	97	85	69	7	12	1F	90	38	21	90	D5	99	38	BA	85	7D	7D	60
44 80	4E	69	46	86	44	46	4E	98	86	69	7	12	1F	90	3A	21	90	D6	99	38	BC	86	7D	7D	60
44 81	4E	6A	46	87	44	46	4E	9A	87	6A	7	12	1E	98	3A	23	98	E0	A0	38	BE	87	7E	7E	61
44 82	4E	6A	46	88	44	46	4E	9B	88	6A	7	11	1E	98	3C	23	98	E0	A0	38	C0	88	7F	7F	61
44 83	4E	6B	46	89	44	46	4E	9C	89	6B	7	11	1C	98	3C	24	98	E0	A0	38	C2	89	80	80	61
44 84	4E	6B	46	8A	44	46	4E	9E	8A	6B	6	11	1C	A0	3E	24	A0	EB	A7	38	C4	8A	81	81	61
44 85	4E	6C	46	8B	44	46	4E	9F	8B	6C	6	11	1B	A0	3E	25	A0	EB	A7	38	C6	8B	82	82	62
44 86	4E	6C	46	8C	44	46	4E	A0	8C	6C	6	10	1B	A0	40	25	A0	EB	A8	38	C8	8C	82	82	62
44 87	4E	6C	46	8D	44	46	4E	A2	8D	6C	6	10	1B	A8	42	25	A8	F5	AE	38	CA	8D	83	83	62
44 88	4E	6D	46	8E	44	46	4E	A3	8E	6D	6	10	1A	A8	42	27	A8	F6	AF	38	CC	8E	84	84	63
44 89	4E	6D	46	8F	44	46	4E	A4	8F	6D	6	F	1A	A8	44	27	A8	F6	AF	38	CE	8F	85	85	63
44 8A	4E	6E	46	90	44	46	4E	A6	90	6E	6	F	1A	B0	44	28	B0	100	B6	38	D0	90	86	86	63
44 8B	4E	6E	46	91	44	46	4E	A7	91	6E	6	F	1A	B0	46	28	B0	100	B6	38	D2	91	87	87	64

4-3-29. Outdoor White Balance Check

Object	White pattern standard picture frame
Filter	Color temperature compensation filter C14 (C12+C2)
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Specified value	Refer to Fig 4-35.

[Check Method]

1) Press the White Balance button to select the outdoor white balance mode. (A mark "☼" appears on the EVF screen or monitor screen (when the data screen is turned on)).
2) Check that the center of the white bright point is within the circumference shown in Fig. 4-35.

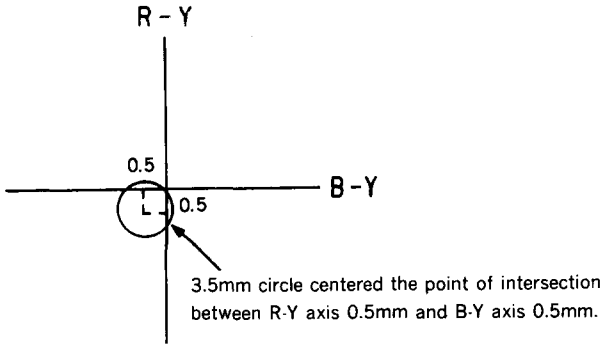


Fig. 4-35.

4-3-30. Focus Motor Speed Adjustment (AF-54P Board)

Object	Optional
Measurement point	Focus ring
Measuring instrument	Stopwatch
Adjustment page	F
Adjustment address	30 (LOW F SPEED)
Specified value	2.5±0.1 second

Reference : A rotation time is about 2.5 seconds from the focusing ring short distance end to long distance end after completing adjustment.

[Adjustment Method]

1) Press the FOCUS button (FD-15P board S212) to turn on auto focus.
2) Select the adjustment page F with the adjustment remote control.
3) Select the adjustment address EB with the adjustment remote control and enter adjustment data 01. (setting of the hunting mode)
4) Set the adjustment address to 30.
5) A rotation time is about 2.5 seconds from the focusing ring short distance end to long distance end.
6) Repeat the step 5) 10 times and obtain an average value. Specified value=2.5±0.1 second.
   When the specified value is not met, repeat the step and 5).
7) Set the adjustment address to EB and the adjustment data to 00. (cancellation of the hunting mode)
8) Change the adjustment address in order to store the adjustment data.

4-3-31. Macro Area Adjustment (AF-54P Board)

Object	Optional
Measurement point	CN801
Measuring instrument	AF microcomputer data reader jig (AF jig)
Adjustment page	F
Adjustment address	37 (ZOOM-POSI 4)
Specified value	AF microcomputer data reader jig data : H+4

[Adjustment Method]

1) Set the zoom ring at the WIDE end.
2) Select the adjustment page F with the adjustment remote control.
3) Select the adjustment address EB with the adjustment remote control and set the adjustment data to C3.
4) Set the adjustment address 37 with the adjustment remote control, an note down the data of the AF jig. (This data is H.)
5) Input the value of (H+4) to the adjustment data.
6) Change the adjustment address to EB and set the adjustment data to 00.
7) Change the adjustment address in order to store the adjustment data.
   (Example)
   AF microcomputer data jig → Input value
   07 → 0B
   06 → 0A
   ⋮ → ⋮

4-3-32. Auto Focus Adjustment

(1) Preparation for AF Data Entry (AF-54P Board)

Object	All black (Cover the lens with a black cap), all white pattern
Measurement point	CN801
Measuring instrument	AF microcomputer data reader jig (AF jig)
Adjustment page	F
Adjustment address	2B (FH BM) 29 (FA BM) 46 (AGC B) 2A (FH WM) 45 (AGC W)
Specified value	FH WM≦28

[Adjustment Method]

1) Turn off auto focus with the FOCUS button (FD-15P board S212).
2) Cover the lens with a black cap.
3) Select the adjustment address EB with the adjustment remote control and set the adjustment data to ED.
4) Read the AF microcomputer data reader jig add +3 and enter this data (FH BM) to the adjustment address 2B.
5) Select the adjustment address EB and set the adjustment data to EF.
6) Read the AF microcomputer data reader jig add +3 and enter this data (FA BM) to the adjustment address 29.
7) Select the adjustment address EB and set the adjustment data 0B.
8) Read the AF microcomputer data reader jig and enter this data (AGC B) to the adjustment address 46.
9) Remove the black cap from the lens and pick up an image with a white pattern (pattern box).
   (When this is done, check that the white diffusion plate for the pattern box is not dirty.)
10) Select the adjustment address EB and set the adjustment data to ED.
11) Read the AF microcomputer data reader jig and enter this data (FH WM) to the adjustment address 2A. (FH WM≦28)
12) Select the adjustment address EB and set the adjustment data to 0B.
13) Read the AF microcomputer data reader jig and enter this data (AGC W) to the adjustment address 45.
14) Select the adjustment address EB and set the adjustment data to 00.
15) Change the adjustment address in order to store the adjustment data.

(2) Auto Focus Check (AF-54P Board)

Object	Siemens star (1.5m in front of the lens datum level (marked by "ϕ"))
Filter	ND filter 1.0×1 pcs., 0.1×2 pcs.
Measurement point	Focus ring
Measuring instrument	Focus ring
Specified values	The focus ring stops at 2 to 3 of the index.

[Measurement method]

1) Place a Siemens star at 1.5m from the lens standard surface (See to Fig. 4-2)
2) Set the zoom lever to the TELE end (68mm) and turn off the auto focus with the FOCUS button (FD-15P board S212).
3) Adjust the camera position so that the center of the Siemens star on the monitor is correspond to the center of the screen.
4) Cover the lens with the ND filter 1.2.

5) Set the focus ring at short range end (1.1m). Make a picture of the Siemens star in the standard frame and turn on the auto focus with the focus button.
6) After 2.0 seconds, confirm that the picture of Siemens star is taken clearly. Turn off the auto focus with the focus button.

Note : In the case of New microcomputer (after MC68HC11E9-SC400188), perform the following adjustment method.

1) Cover the lens with black cap and make all black.
2) Set the zoom lever to the WIDE end, and turn off the auto focus with the FOCUS button.
3) Set the focus ring to ∞ and turn on the auto focus.
4) Confirm that the focus ring stops within the range of index 2 to 3.

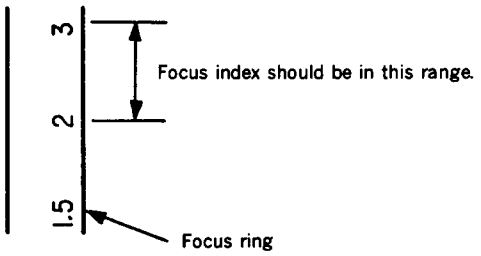


Fig. 4-36

4-3-33. Auto Focus Measuring distance Check

Object	Siemens star (at a distance of 1.5m in front of the lens datum level (marked by "ϕ"))

Note 1 : Connect the EVF (Electronic View Finder) to make adjustment.

[Measurement Methed]

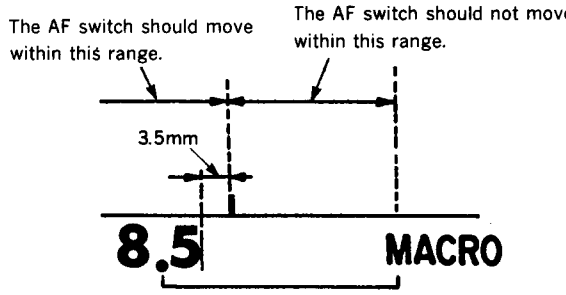
1) Place the Siemens star at a distance of 1.5m in front of the lens datum level (refer to Fig. 4-2).
2) Cover the ND filter 1.2.
3) Shift the zoom lever to the TELE end (68mm).
4) Adjust a camera block position to center the Siemens star on the monitor screen with the monitor screen.
5) Turn off auto focus with the FOCUS button (FD-15P board S212).
6) Turn the focusing ring as far as the short distance end (1.1m).
7) Press the PUSH AUTO button (FD-15P board S213).
8) After 2 seconds, check that a clear image can be obtained.
9) Turn off auto focus and turn the focusing ring as far as the long distance end (∞).
10) Press the PUSH AUTO button.
11) After 3 seconds, check that a clear image can be obtained.

4-3-34. AF-Zooming Check

Object	All white pattern
Measurement point	Lens focusing ring or zoom ring
Specified value	Refer Fig. 4-37.

[Checking Method]

1) Obtain a picture of all white pattern by the WIDE end. And check that turning off and on the auto focus with the FOCUS switch (FD-15P board S212) permits the operation of both ends of the short distance end (1.1m) and the long distance end (on) over one operation.
2) After setting the Zoom lever in the MACRO range as shown in the figure, check that the focus ring does not move when the focus switch is turned ON and OFF, and turned ON again.



(After pushing fully the zoom lever to the MACRO point, put it back to the position in the figure.)

Fig. 4-37.

4-4. DIGITAL TITLER SYSTEM ADJUSTMENT

4-4-1. Chroma Phase/Gain Adjustment (FD-15P Board)

Mode	CAMERA Standby
Object	All Black (Cover the lens with a black cap.)
Measurement point	VIDEO OUT terminal
Measuring instrument	Vectorscope
Adjustment element	RV301
Specified value	Adjust Mg (Magenta) to the specified range. (Check that other colors are also in the specified range.)

[Adjustment Method]

1) Cover the lens of the camera with a black cap.
2) Press the TITLE 1. button (FD-15P board S202).
3) Select Mg (Magenta) pressing the COLOR/MODE button (FD-15P board S205).
4) Display the title on the whole screen pressing the MEMORY button (FD-15P board S204).
5) The specified range should be satisfied with RV301 at this time.
6) Check that the specified range of the other colors are also satisfied.

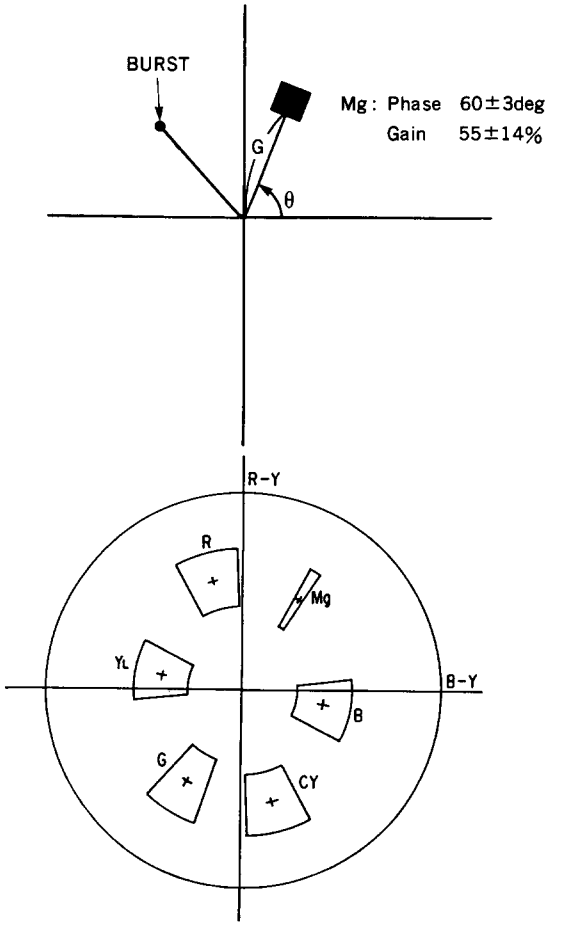


Fig. 4-38.

4-4-2. Fader Level Adjustment (VC-67P Board)

Object	All black (Cover the lens with a black cap)
Measurement point	Checkpoint array (A8) pin (CAM Y) or CN307 pin ① (Y OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	1D (FADER LEVEL) 1F (FADER CONT)
Specified value	240±5mVp-p

[Adjustment Method]

1) Select the adjustment address 1F with the adjustment remote control and pre-set the adjustment data to FF.
2) Set the adjustment address to 1D with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to adjust the fader level to 240±5mVp-p.
4) Select the adjustment address 1F with the adjustment remote control and set the adjustment data to 00.
5) Change the adjustment address in order to store the adjustment data.

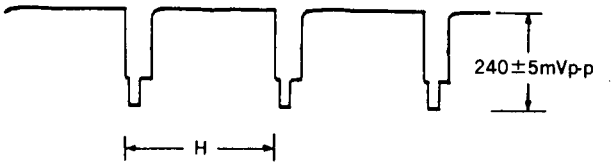
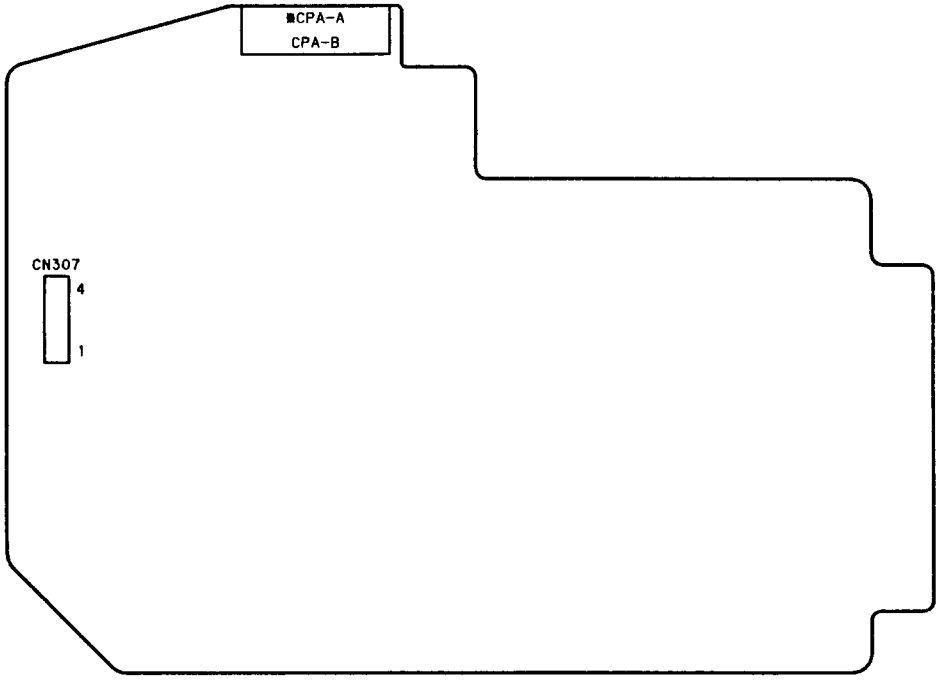


Fig. 4-39.

4-5. ADJUSTING PART LOCATION DIAGRAM

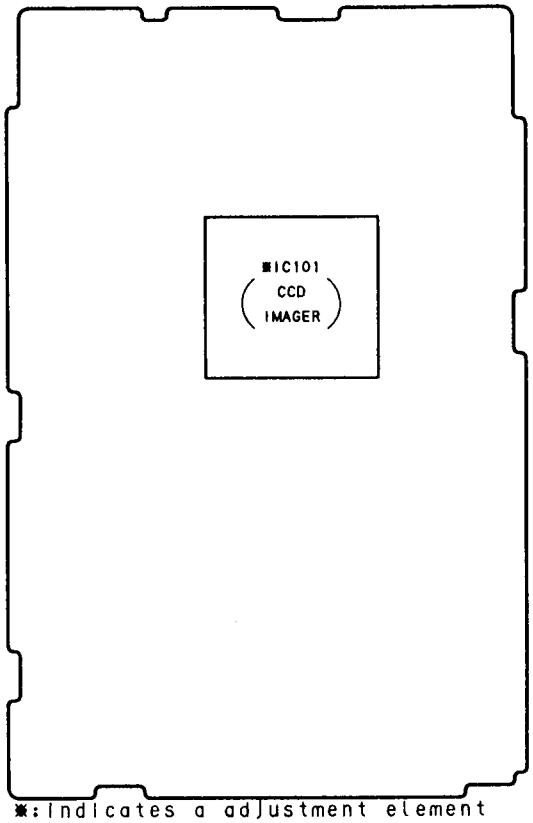
VC-67P BOARD

(CONDUCTOR SIDE)



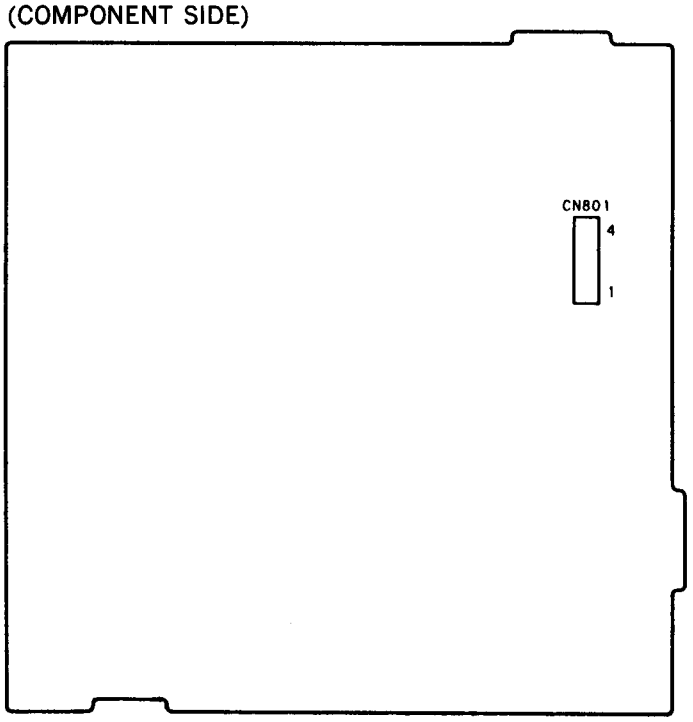
CD-20P BOARD

(COMPONENT SIDE)



AF-54P BOARD

(COMPONENT SIDE)



✱: Indicates a adjustment element mounted on the conductor side.

SECTION 5
ELECTRICAL ADJUSTMENT

See the adjusting part location diagram from on page 136 for the adjustment

5-1. PREPARATION FOR ADJUSTMENT

5-1-1. Equipment Required

The following measuring instruments are used for adjustment of the VTR block.

1) Monitor TV
2) Dual-trace oscilloscope, band width of 10MHz or more, with delay mode (use a probe 10 : 1, unless otherwise specified)
3) Frequency counter
4) Pattern generator (with video output terminal ; refer to 5-1-3 "Equipment Connection")
5) Digital voltmeter
6) Audio generator
7) Auido level meter
8) Audio distortion meter
9) Audio attenuator
10) Stabilized power supply
11) Alignment tape
    - For tracking adjustment
      (WR5-1CP) Part No. : 8-967-995-07
    - For video frequency characteristic adjustment
      (WR5-7CE) Part No. : 8-967-995-18
    - For L mode operation check
        - For SP (WR5-5CSP) Part No. : 8-967-995-46
          (WR5-4CSP) Part No. : 8-967-995-47
        - For LP (WR5-4CL) Part No. : 8-967-995-56
    - For E mode operation check (ME tape)
        - For SP (WR5-8CSE) Part No. : 8-967-995-48
        - For LP (WR5-8CLE) Part No. : 8-967-995-57

5-1-2. Precaution for Adjustment

Except "battery down adjustment" of system control system adjustment, "Switching position adjustment" of servo system adjustment the video block can be also adjusted with the camera block removed. When removing the camera block, disconnect the following 5 connectors.

1. DC-DC converter 2 pin connector (connect the FU-71P board. CN101)
2. VC-67P board CN305
3. VC-67P board CN307
4. SW-120P board CN701
5. SW-120P board CN702

The Index block (CC-33P board) is required only for time code system adjustment. When removing the time code block, disconnect the following connectors of the SS-133 board.

1. CN007 (Connect the CC-33P board W901 (pin ① to pin ⑯))
2. CN009 (Connect the CC-33P board W901 (pin ⑰ to pin ㉞))

The audio system (AU-60P board) is not required for video block adjustment. When removing the AU-60P board, disconnect the following connectors.

1. VA-62 board CN551

Set the following menu as follows :
(Mode set)

- Hi8 ····· AUTO
- REMOTE ····· ON
- EDIT ····· ON
- BILINGUAL ····· OFF

5-1-3. Equipment Connection

Connect the measuring instruments as shown in Fig. 5-1 in accordance with indication of an input terminal (S VIDEO or VIDEO), and shift the CAMERA/VTR switch (FK-46 board S095) to VTR to make adjustment. The input terminal is specified in parentheses at the signal blank. When not specified, either input terminal may be used. The S VIDEO IN terminal has priority. When making adjustment with VIDEO IN terminal input, pull out a connector from the S VIDEO IN terminal.

Note 1 : When VIDEO input is used for adjustment where S VIDEO input is specified, the specifications of this equipment may not be satisfied. Be sure to follow instructions.

Note 2 : When adjustment is made using the VTR with S video output terminal as a signal source, the performance of this equipment is affected by that VTR. Use the pattern generator with Y/C separator output terminal as much as possible.

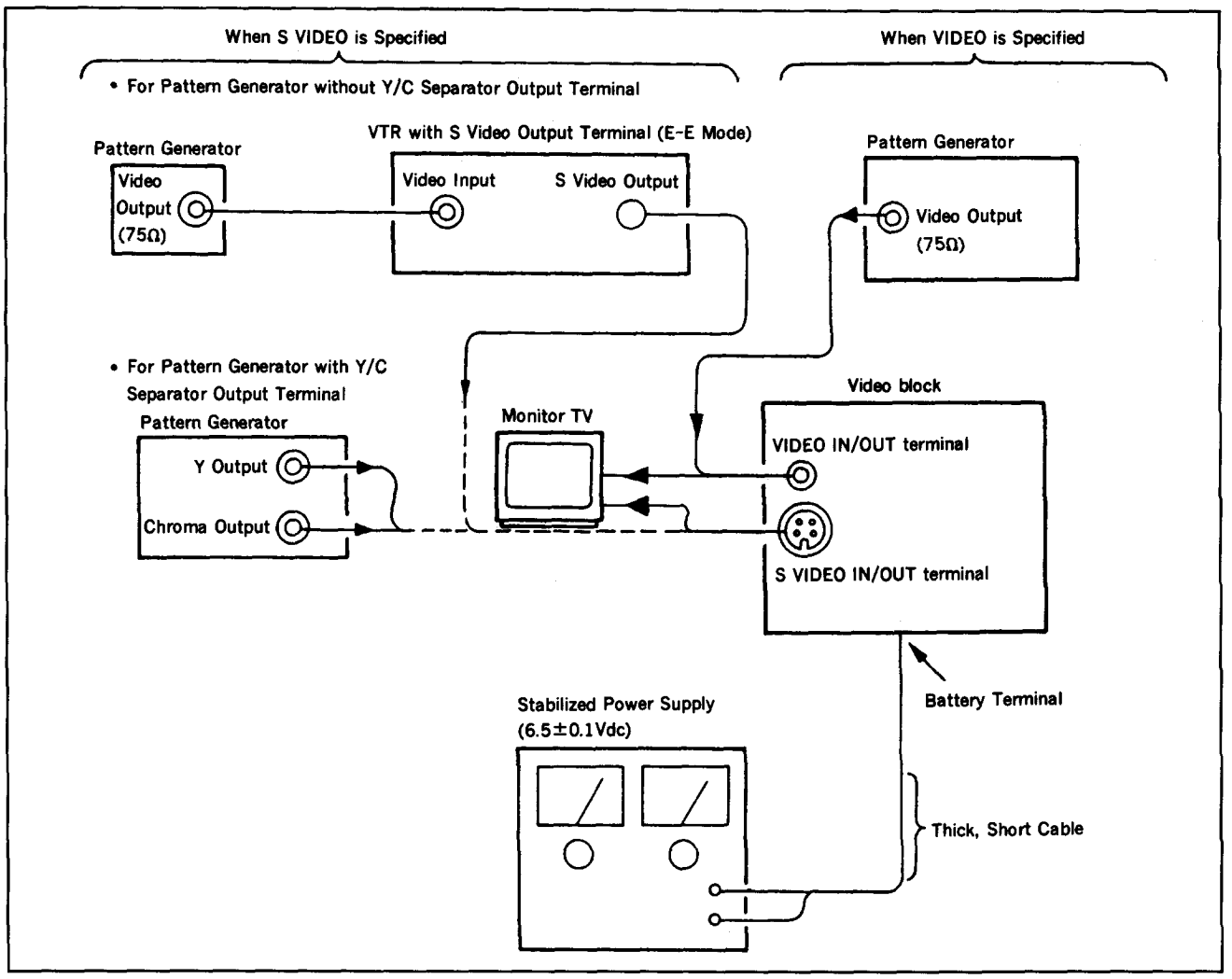


Fig. 5-1.

5-1-4. Input Signal Check

Video signals from the pattern generator are used as adjustment signals for adjustment of the VTR block. These video output signals should be within the required standard.

1) For S VIDEO input

Connect an oscilloscope to the Y signal terminal of the S VIDEO IN terminal (VA-62 board J650) and check that a Y signal sync. signal has an amplitude of about 0.3 Vp-p, and an image amplitude is about 0.7 Vp-p. (When the VTR with S video output terminal is used, check also that neither chroma signal nor burst signal is remaining.) Also, connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal and check that the burst signal for the chroma signal has a flat amplitude of about 0.3 Vp-p, and that a burst signal vs. chroma signal amplitude ratio is 0.30 : 0.66. Fig. 5-2 shows the Y and chroma signals used for adjustment.

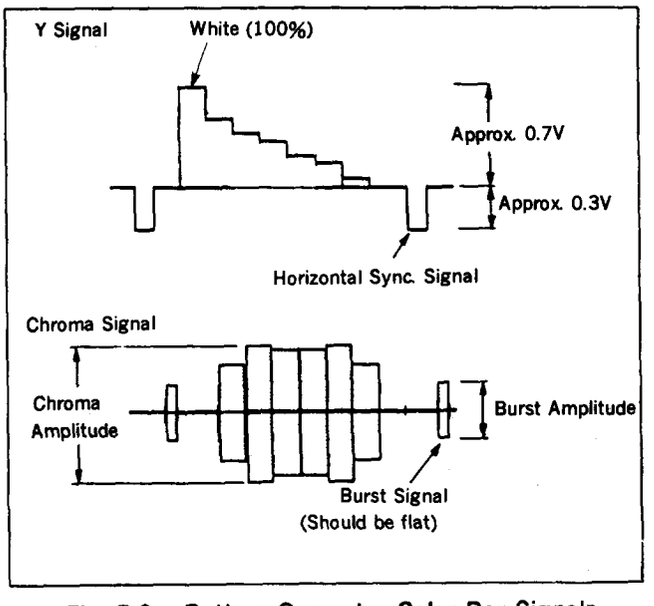


Fig. 5-2. Pattern Generator Color Bar Signals

2) For VIDEO input

Connect the oscilloscope to the VIDEO IN terminal (VA-62 board J650) and check that a video signal sync. signal amplitude is approx. 0.3V, image amplitude approx. 0.7V, and burst signal amplitude approx. 0.3V and flat, respectively, and that a burst signal vs. "red" signal level ratio is 0.30 : 0.66.

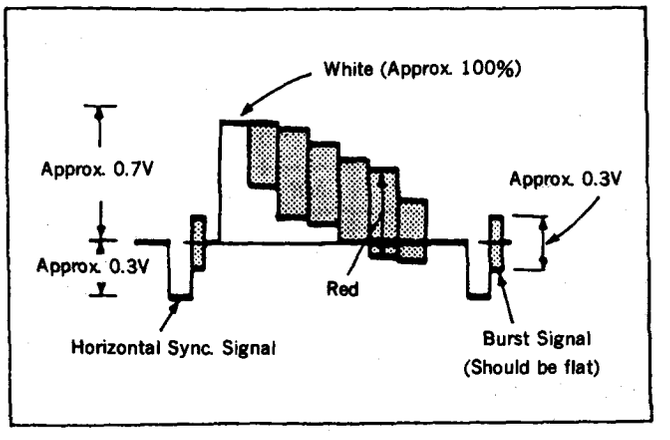


Fig. 5-3. Pattern Generator Color Bar Signal

[Alignment Tape]

The following alignment tapes are provided. Use the alignment tape specified in the signal blank for each adjustment.

When using the operation checking tape for adjustment and no type is specified, you can use any operation checking tape.

Tape	Recording Mode	Tape Type	Tape Speed	Recording content: Video Area	Recording content: PCM Area (Audio)	Use
Tracking WR5-1CP	L	MP	SP	CH2 : 1 MHz tape path adjustment signal, Switching position adjustment marker (CH1 : 9MHz)		Tape path adjustment, Switching position adjustment
Video frequency characteristic WR5-7CE	E	ME	LP	RF sweep 0~15MHz Marker 2, 4.5, 7, 8.5, 10MHz		Frequency characteristic adjustment
Operation checking WR5-3CSP or WR5-5CSP	L	MP	SP	• Video signal Color bar : 4min. Monoscope : 4min. • Audio signal (AFM) 400Hz, 60%modulation	Monoscope portion 20Hz, 20sec. / 400Hz, 20sec. / 14kHz, 20sec. } Repeat 4 times Color bar portion 1kHz, 4min.	Operation checking
WR5-8CSE	E	ME	SP		400Hz, 8min	
WR5-3CL	L	MP	LP	• Video signal Color bar : 4min. Monoscope : 4min. • Audio signal (AFM) 400Hz, 60%modulation		
WR5-8CLE	E	ME	LP		400Hz, 8min	

Note : Recording modes

L ..... Conventional mode

E ..... hi8 (high band) mode

Tape types

MP ..... Coated metal tape

ME ..... Evaporated metal tape

Fig. 5-4 shows the color bar signal recorded in the alignment tape.

Note : Measure at the VIDEO OUT terminal (terminated at 75Ω).

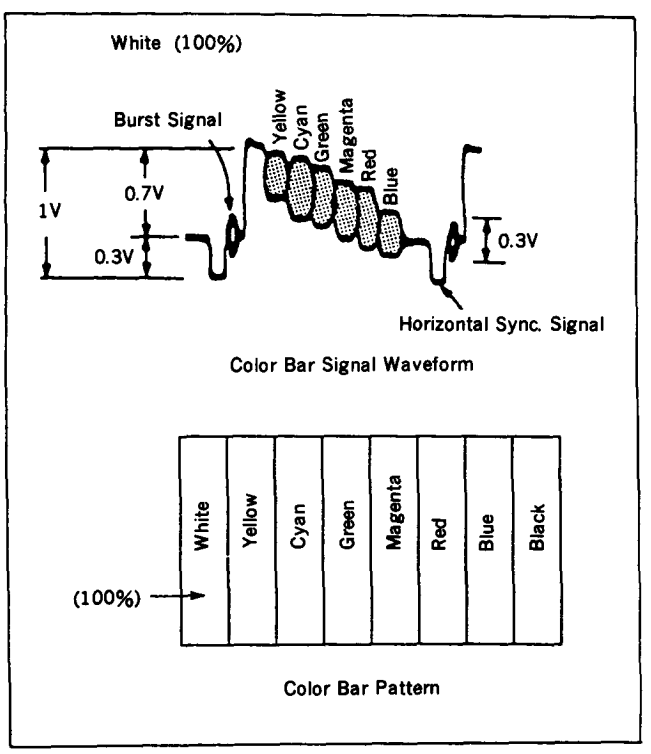


Fig. 5-4. Alignment Tape Color Bar Signal

[I/O Level and Impedance]

Video input (AUS, E MODEL)	phono jack Input signal :	1 Vp-p, 75Ω unbalance, sync. negative
Video output	phono jack Output signal :	1 Vp-p, 75Ω unbalance, sync. negative
S video input (AUS, E MODEL)	(4-pin mini-DIN) Luminance signal :	1 Vp-p, 75Ω unbalance, sync. negative
	chroma signal :	0.3 Vp-p, 75Ω unbalance
S video output	(4-pin mini-DIN) Luminance signal :	1 Vp-p, 75Ω unbalance, sync. negative
	chroma signal :	0.3 Vp-p, 75Ω unbalance
Auido input (AUS, E MODEL)	phono jack Input level :	−7.5dBs (0dBs= 0.775Vrms)
Audio output	phono jack Specified output :	−7.5dBs (at 47kΩ load)
	Output impedance :	2.2kΩ or less

5-1-5. Recording Mode (E Mode/L Mode) Changeover

The recording mode of this equipment is changed over as shown in the table below. The playback mode (E mode/L mode) is automatically changed over depending on the recording mode for the tape to be played back.

Menu Mode set [Hi8] (L Model/E Model Selector Menu)	CAMERA/VTR Power Switch (FK-46 Board S509)	S VIDEO IN Terminal (VA-62 Board J651)	Tape Used	Recording Mode
AUTO (E mode)	CAMERA	Irrelevant	ME	E
			MPHG	
			MP	L
	VTR	Connector inserted	ME	E
			MPHG	
			MP	L
		Nothing inserted	ME	L
			MPHG	
			MP	
OFF (L mode)	Irrelevant	Irrelevant	ME	L
			MPHG	
			MP	

5-2. POWER SUPPLY CHECK

5-2-1. Supply Voltage Check (FU-71P Board)

Mode	E-E
Measuring instrument	Digital voltmeter
SS 5V check	
Measurement point	CN102 pin ⑫
Specified value	5.00±0.15Vdc
VI 5V check	
Measurement point	CN102 pin ⑳
Specified value	5.00±0.15Vdc
AUDIO 5V check	
Measurement point	CN102 pin ⑭
Specified value	5.00±0.15Vdc
EVF 5V check	
Measurement point	CN102 pin ⑭
Specified value	5.00±0.15Vdc

[Check Method]

1) Each supply voltage must meet its specified value.

5-3. SYSTEM CONTROL SYSTEM ADJUSTMENT

5-3-1. Battery Down Adjustment

Mode	CARERA REC
Signal	Unnecessary
Measurement point	Display on the adjustment remote control
Measuring instrument	Adjustment remote control
Adjustment Page	D
Adjustment address	06
Specified value	d: 06:05 (reference value) Note: Actually, exact data of 5.5V_{DC} of page D address 06 is written.

[Connection]

1) Make the set MIC board, EVF board, and CAMERA section connected.
2) Connect the adjustment remote control to the REMOTE terminal.
3) Connect the digital voltmeter so to measure the voltage of the stabilized power supply unit connected to the battery terminal.

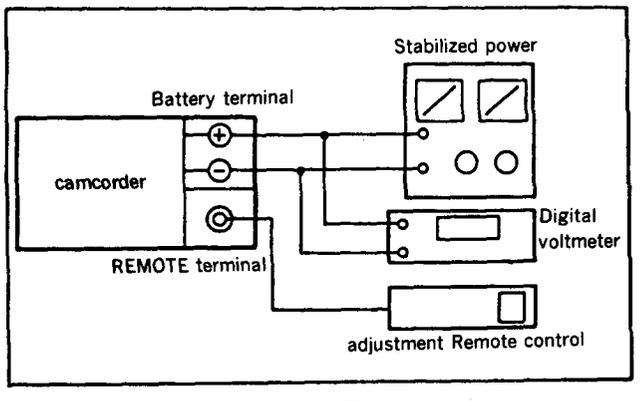


Fig. 5-5.

[Adjustment Method]

1) Turn on the POWER switch. (CAMERA mode)
2) Adjust the output of the stabilized power supply unit to be 5.58±0.01 V_{DC} (battery terminal voltage).
3) Turn on the CAMERA REC mode.
4) Set the HOLD switch of the remote control for adjustment to the HOLD side.
5) Press once the EDIT SEARCH (+) button of the adjustment commander select page 1, select data 01 of address 00, and release the protector.
6) Press four times the EDIT SEARCH (−)button of the remote control for adjusment. (Set the adjustment page to D.)
7) Be sure to set the adjustment address 06 with FF or REW button of the remote control for adjustment, and press the PAUSE button.

(reference value)

8) Turn off the POWER switch.

[Checking Method]

1) Turn on the power.
2) Adjust the output of the stabilized power source to be $5.66 \pm 0.01 V_{DC}$.
3) Set the camera REC mode.
4) After five seconds,TALLY should flash at 0.8Hz. (Battery Pre End)
5) Adjust the output of the stabilized power source to be $5.58 \pm 0.01 V_{DC}$.
6) Set the camera REC mode.
7) After five seconds, STOP mode should be set and TALLY should flash a 3.2Hz. (Battery END)

5-3-2. Clock Accuracy Adjustment (FD-15P Board)

Mode	E-E
Signal	Unnecessary
Measurement point	IC201 pin ⑲
Measuring instrument	Ocsilloscope Freguency counter
Adjustment element	CT201
Specified value	512.003±0.001Hz

[Adjustment Method]

1) Adjust to 512.003±0.001Hz with CT201.

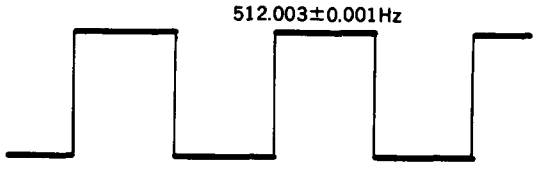


Fig. 5-6.

5-4. SERVO SYSTEM ADJUSTMENT

5-4-1. Switching Position Adjustment (SS-133 Board)

Mode	Playback
Signal	Alignment tape : Operation check (WR5-1NP)
Measurement point	CH1 : CN200 pin ④ (RF SWP) CH2 : CN200 pin ③ (RF OUT)
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	05 04
Specified value	$t_1 = 0 \pm 5\mu$sec $t_2 = 0 \pm 5\mu$sec

[Adjustment Method]

1) Set the HOLD switch of the remote control for adjustment to the HOLD side. (ADJUST MODE is set.)
2) Select page 1 with the remote control for adjustment and select adjustment data 01 of adjustment address 00. (Protector is released.)

3) Press four times the EDIT SEARCH (—) button of the remote control for adjustment. (Adjustment page D is set.)
4) Select the adjustment address to 05 in order to change the adjustment data, and adjust to $t_1 = 0 \pm 5\mu$sec.
5) Press the PAUSE button in order to store the adjustment data.

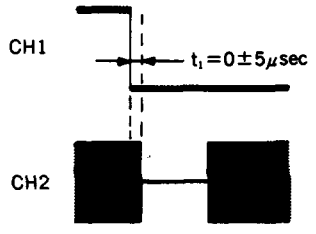


Fig. 5-7.

6) Select the adjustment address 04 in order to change the adjustment data and adjust to $t_2 = 0 \pm 5\mu$sec.

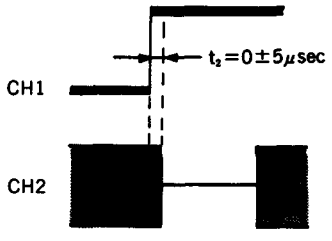


Fig. 5-8.

7) Press the PAUSE button in order to store the adjustment data.

5-4-2. Oscillation Frequency Adjustment (FU-71P Board)

Mode	Record
Signal	Unnecessary
Measurement point	Q102 collector
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	RV102
Specified value	400±2kHz

[Adjustment Method]

1) Adjust to 400±2kHz with RV102.

5-4-3. Output Voltage Adjustment (FU-71P Board)

Mode	Record
Signal	Unnecessary
Measurement point	(+) side: CN102 pin ⑳ (VI 5V) (−) side: CN102 pin ⑲ (VI GND)
Measuring instrument	Digital voltmeter
Adjustment element	RV101
Specified value	4.90±0.02V_{DC}

[Adjustment Method]

1) Adjust to 4.90±0.02V_{DC} with RV101.

5-5. VIDEO ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure below. The color video input signal supplied from the pattern generator is used as the video input signal for video adjustment in the REC mode. Make sure that the SYNC signal and color burst signal are matched with the standard specified for set-up as shown in the Fig. 5-2 during adjustment.

[Adjustment Sequence]

1) Playback Frequency Characteristic Adjustment
2) X'tal Oscillator fo Check
3) E-E Adjustment
4) IR Adjustment
5) Chroma Comb Filter Adjustment
6) Emphasis Y Level Adjustment
7) L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment
8) E Mode Y FM Carrier Frequency, Y FM Deviation Adjustment
9) Chroma Emphasis Adjustment
10) HUE Phase Deviation Adjustment
11) Recording current Adjustment
12) Y Level Adjustment
13) C Out Level Adjustment
14) PB CCD Input Level Adjustment
15) E Mode PB Y Level Adjustment
16) L Mode PB Y Level Adjustment
17) YD Adjustment

5-5-1. Playback Frequency Characteristic Adjustment (SS-133 Board)

(1) CH1, CH2 Adjustment

Description in [ ] is for CH2 adjustment.

Mode	Playback
Signal	Alignment tape for frequency characteristic adjustment (WR5-7CE)
Measurement point	CN200 pin ③ External trigger: CN200 pin ④ (RF SWP) Trigger scope: +, [−]
Measuring instrument	Oscilloscope
Adjustment element	RV202 [RV203]
Specified value	When the 4.5MHz signal level is set to 3, the 8.5 MHz signal level is 2±0.2.

[Adjustment Method]

1) Adjust RV202 [RV203] so that the 8.5MHz signal level will be 2±0.2 when the 4.5MHz signal level is set to 3.

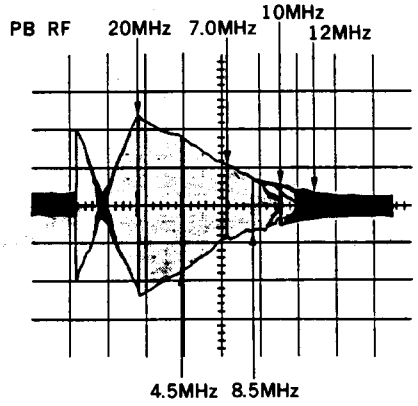


Fig. 5-9.

(2) CH1′ Adjustment

Mode	Playback (service mode)
Signal	Alignment tape for frequency characteristic adjustment (WR5-7CE)
Measurement point	CN200 pin ① External trigger: CN200 pin ④ (RF SWP) Trigger slope: −
Measuring instrument	Oscilloscope
Adjustment element	RV201
Specified value	The 8.5MHz signal level is 2±0.2 when the 4.5 MHz signal level is set to 3.

[Adjustment Method]

1) Turn on the HOLD of the adjustment remote control.
2) Set the adjustment remote control page 1 and the adress 4D, and write down the data value. (This data is set to A.).
3) Adjust the data to 20 with the adjustment remote control.
4) Feed the address in order to store the adjustment data.
5) Turn off the HOLD of the adjustment remote control and set the playback mode.
6) Adjust with RV201 so that the 8.5MHz signal level in 2±0.2 when the 4.5MHz signal is set to 3.
7) After the adjustment, set the page 1 and the address 40, and set the data A.
8) Feed the address in order to store the adjustment data.

5-5-2. X'tal Oscillator fo Check (VA-62 Board)

Made	E-E
Signal	Color bar
Measurement point	IC651 pin ⑫
Measuring instrument	Oscilloscope Frequency counter
Specified value	4433619±50Hz

[Check Method]

1) Make sure that the oscillation frequency of IC651 pin ⑫ is 4433619±50Hz.

4433619±50Hz

Fig. 5-10.

5-5-3. E-E Level Adjustment (VA-62 Board)

Mode	E-E
Signal	Color bar (VIDEO)
Measurement point	J651 (VIDEO OUT terminal)
Measuring instrument	Oscilloscope
Adjustment element	RV652
Specified value	1.000±0.025Vp-p

Note: J651 (VIDEO OUT terminal) mast be terminated at 75Ω.

[Adjustment Method]

1) Adjust to 1.000±0.025Vp-p with RV652.

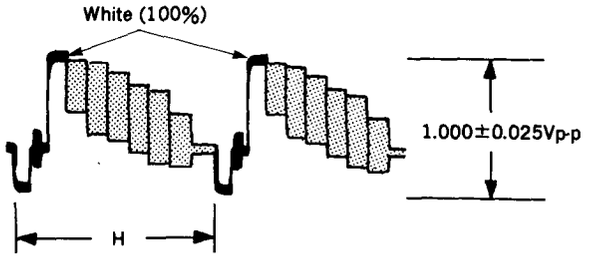


Fig. 5-11.

5-5-4. IR Adjustment (VA-62 Board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement point	IC650 pin ⑦
Measuring instrument	Oscilloscope
Adjustment element	RV650
Specified value	Minimum red residual chroma component (50mVp-p or less)

[Adjustment Method]

1) Minimize the red residual chroma component with RV650.(50mVp-p or less)

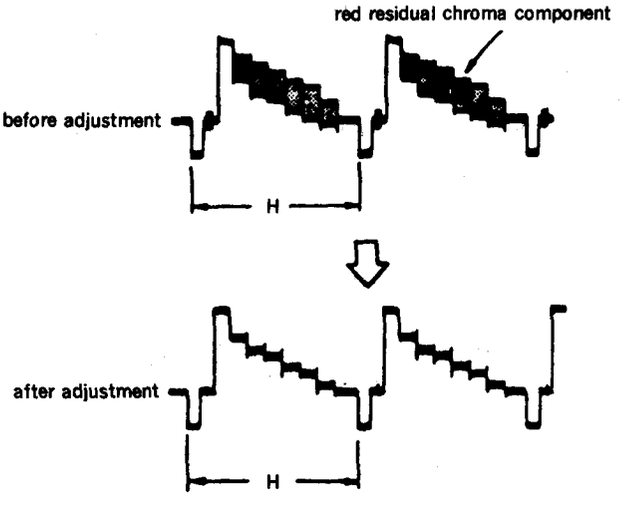


Fig. 5-12.

5-5-5. Chroma Comb Filter Adjustment (VA-62 Board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement point	IC650 pin ⑪
Measuring instrument	Oscilloscope
Adjustment element	RV651 (COMB) RV664 (SEP)
Specified value	Minimum red residual chroma component (30mVp-p or less)

[Adjustment Method]

1) Adjust RV651 and RV664 alternately and minimize the red residual chroma component. (30mVp-p or less)

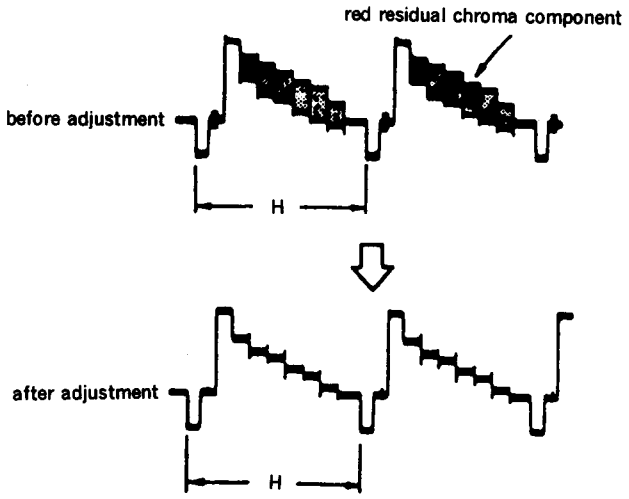


Fig. 5-13.

5-5-6. Emphasis Y Level Adjustment (VA-62 Board)

Mode	Record
Signal	Color bar
Measurement point	IC650 pin ③
Measuring instrument	Oscilloscope
Adjustment element	RV662
Specified value	500±20mVp-p

[Adjustment Method]

1) Adjust to 500±20mVp-p with RV662.

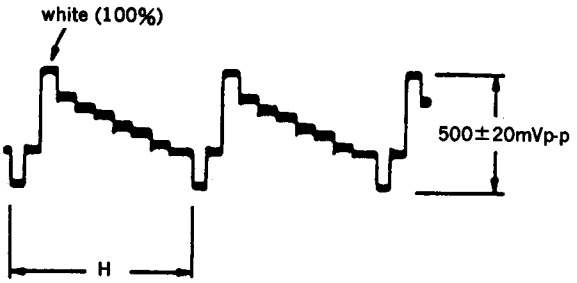


Fig. 5-14.

5-5-7. L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

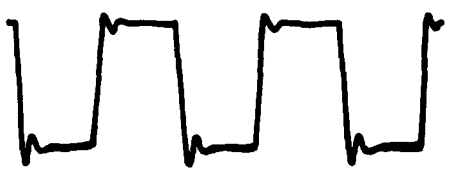
Note : After completing this adjustment, be sure to make E mode Y FM carrier frequency, Y FM deviation adjustment as described in 5-5-8.

(1) L Mode Y FM Carrier Frequency Adjustment (VA-62 Board)

Mode	E-E
Signal	No signal
Measurement point	IC650 pin ㊸ (Y RF OUT)
Measuring instrument	Frequency counter
Adjustment element	RV653
Specified value	4.20±0.05MHz

[Adjustment Method]

1) Set an MP type cassette tape.
2) Adjust to 4.20±0.05MHz with RV653.
3) Make L mode Y FM deviation adjustment described in (2) below.



4.20±0.05MHz

Fig. 5-15.

(2) L Mode Y FM Deviation Adjustment (VA-62 Board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV654
Specified value	Playback level of 1.00±0.05Vp-p

Note 1 : Y level out adjustment and L mode Y FM carrier frequency adjustment must have been completed.

[Adjustment Method]

1) Set an MP type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback output level.
   Specified value: 1.00±0.05Vp-p.
5) When the specified value is not met, turn RV654 as follows and repeat the steps 1) through 3) above.

	RV654 Rotating Direction
When larger than specified value	Counterclockwise direction (↺)
When smaller than specified value	Clockwise direction (↻)

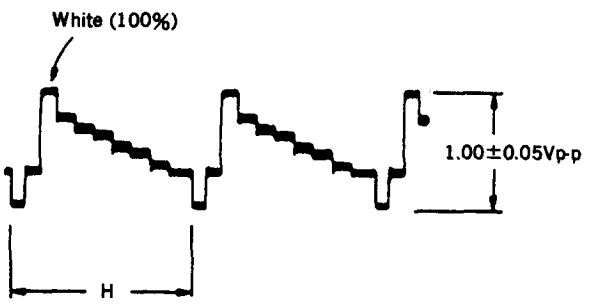


Fig. 5-16.

5-5-8. E Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Note 1 : Make this adjustment after completing "5-5-7 L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment".

Note 2 :A connector must be inserted into the S VIDEO IN terminal (J651) (at no-signal time as well).

(1) E Mode Y FM Carrier Frequency Adjustment (VA-62 Board)

Mode	E-E
Signal	No signal
Measurement point	IC650 pin ㊸ (Y RF OUT)
Measuring instrument	Frequency counter
Adjustment element	RV656
Specified value	5.70±0.05MHz

[Adjustment method]

1) Set an ME type cassette tape.
2) Adjust to 5.70±0.05MHz with RV656.
3) Make E mode Y FM deviation adjustment as described in (2) below.

Fig. 5-17.

(2) E Mode Y FM Deviation Adjustment (VA-62 Board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV657
Specified value	Playback level of 1.00±0.05Vp-p

Note 1 :Y out level adjustment and E mode Y FM carrier frequency adjustment must have been completed.

[Adjustment Method]

1) Set an ME type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback output level.
   Specified value: 1.00±0.05Vp-p
5) When the specified value is not met, turn RV657 as follows and repeat the steps 1) through 3) above.

	RV657 Rotating Direction
When larger than specified value	Counterclockwise direction (↺)
When smaller than specified value	Clockwise direction (↻)

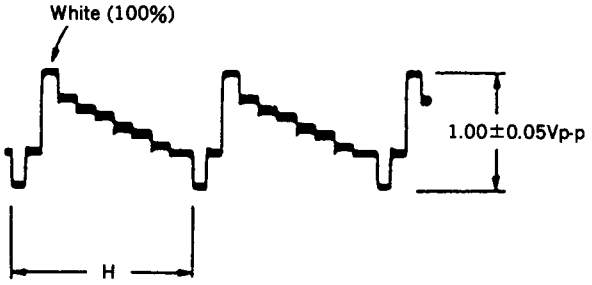


Fig. 5-18.

5-5-9. Chroma Emphasis Adjustment (VA-62 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC651 pin ㉔
Measuring instrument	Oscilloscope
Adjustment element	FL650
Specified value	Minimum red level (170mVp-p or less)

[Adjustment Method]

1) Minimize the red level with FL650 (170mVp-p or less)

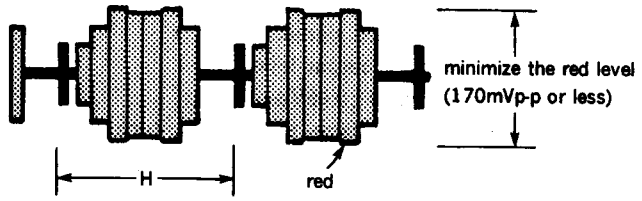


Fig. 5-19.

5-5-10. HUE Phase Deviation Adjustment (VA-62 Board) (Use a Vectorscope)

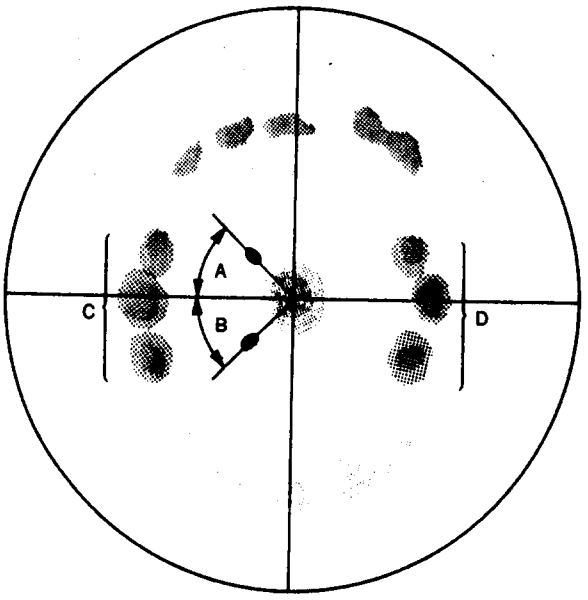
Mode	Playback+Pause
Signal	Alignment tape for operation check (WR5-5CSP), Color bar portion
Measurement point	J650 (VIDEO OUT)
Measurement equipment	Vectorscope
Adjustment element	RV686 (FSC) RV658 (APC LPE)
Specified value	See Fig. 5-20.

[Connection]

1) Input 4.43MHz signal from Pin⑫ of IC651 to 1CH of an oscilloscope.
2) Connect 1CH output of an oscilloscope to the EXT. subcarrier reference input of a vectorscope.
3) Put on the EXT. subcarrier switch of a vectorscope.

[Adjustment Method]

1) Adjust with RV686 so as to equalize A and B as shown in Fig. 5-20.
2) Adjust with RV658 so as to minimize the shaking of each three brighting point of C and D.



RV686: A=B
RV658: make C and D a contrast

Fig. 5-20.

5-5-11. Recording Current Adjustment

Make this adjustment in the E mode, using the ME tape. Before adjustment, check the following :

1) A connector must be inserted into the S VIDEO IN terminal (VA-62 board J650). (at no-signal time as well) Also, remove CN002 of the CC-33P board in order to prevent the index system from being affected.

(1) REC Y Recording Current Adjustment (SS-133 Board)

Mode	Recording
Signal	No signal
Measurement point	TP204
Measuring instrument	Oscilloscope
Adjustment element	RV207
Specified value	180±10mVp-p

Note 1 :After REC Y recording current adjustment, be sure to wake REC C, REC AFM and REC ATF recording current adjustments or check.

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 180±10mVp-p with RV207.

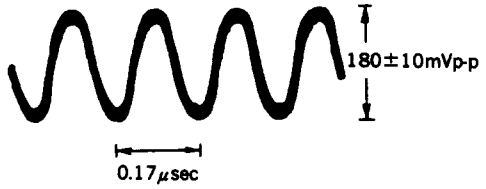


Fig. 5-21.

(2) REC C Recording Current Adjustment (SS-133 Board)

Mode	Recording
Signal	Color bar (S VIDEO)
Measurement point	TP204
Measuring instrument	Oscilloscope
Adjustment element	RV206
Specified value	45±5mVp-p

Note 1 :After REC C recording current adjustment, be sure to make REC AFM and REC ATF recording current adjustments.

[Connection]

1) Connect the following 3 sections with jumper wires.
   1. VA-62 board W650 pin ㉙ (REC Y RF) to pin ① (VIDEO 5V)
   2. VA-62 board W650 pin ㉞ (REC AFM RF) to pin ① (VIDEO 5V)
   3. SS-133 board Q153 emitter (ATF) to IC150 pin ㉗ (SS 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 45±5mVp-p with RV206.

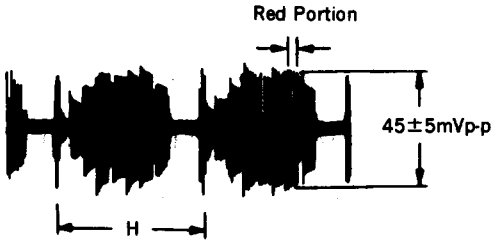


Fig. 5-22.

(3) REC AFM Recording Current Adjustment (SS-133 Board)

Mode	Recording
Signal	No signal
Measurement point	TP204
Measuring instrument	Oscilloscope
Adjustment element	RV205
Specified value	15.0±1.5mVp-p

Note 1 : When the TP204 signal level is too low to read, connect directly through a 100Ω resistor as shown in the figure below instead of using a probe of 10 : 1.

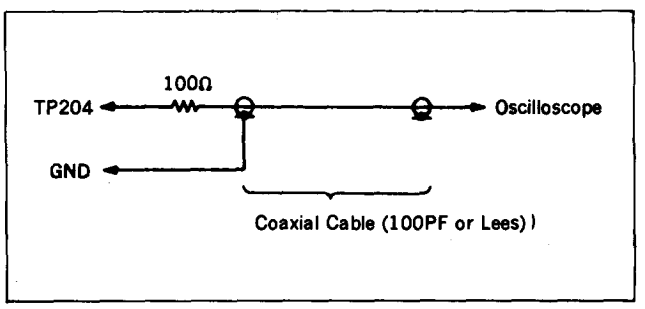


Fig. 5-23.

[Connection]

1) Connect the following 3 sections with jumper wires :
   1. VA-62 board W650 pin ㉙ (REC Y RF) to pin ① (VIDEO 5V)
   2. VA-62 board W650 pin ㉛ (REC C RF) to pin ① (VIDEO 5V)
   3. SS-133 board Q153 emitter (ATF) to IC150 pin ㉗ (SS 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 15.0±1.5mVp-p with RV205.

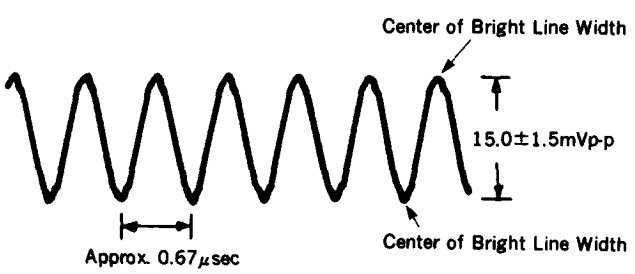


Fig. 5-24.

(4) REC ATM Recording Current Check (SS-133 Board)

Mode	Recording
Signal	No signal
Measurement point	TP204
Measuring instrument	Oscilloscope
Specified value	12.0±1.5mVp-p

Note 1 : When the TP204 signal level is too low to read, connect directly through a 100Ω resistor as shown in the figure below without using a probe of 10 : 1.

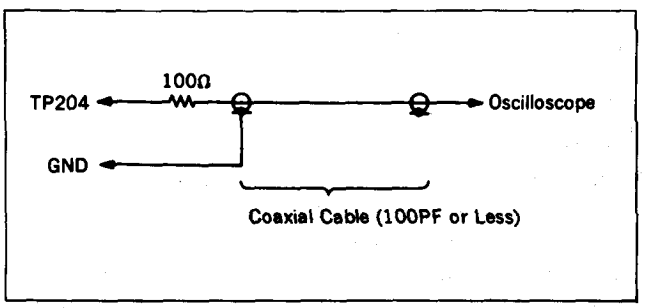


Fig. 5-25.

[Connection]

1) Connect the following 3 sections with jumper wires.
   1. VA-62 board W650 pin ㉙ (REC Y RF) to pin ① (VIDEO 5V)
   2. VA-62 board W650 pin ㉛ (REC C RF) to pin ① (VIDEO 5V)
   3. VA-62 board W650 pin ㉞ (REC AFM RF) to pin ① (VIDEO 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Check to 12.0±1.5mVp-p.

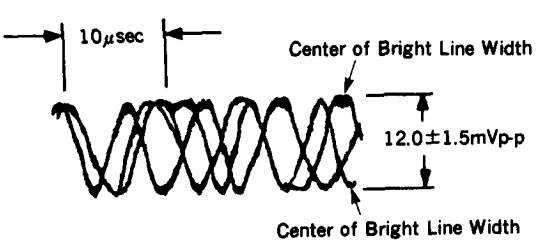


Fig. 5-26.

5-5-12. Y OUT Level Adjustment (VA-62 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV661
Specified value	1.020±0.025Vp-p

[Connection]

1) Terminate the signal terminal for J650 (S VIDEO) at 75Ω.

[Adjustment Method]

1) Adjust to 1.020±0.025Vp-p with RV661.

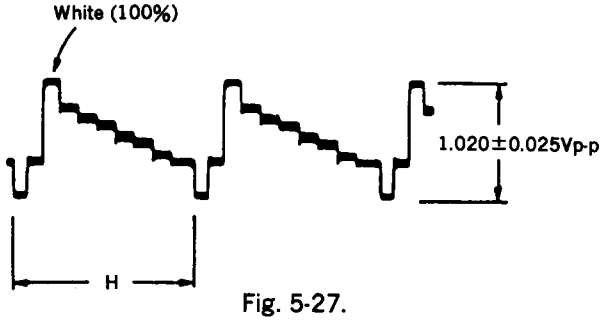


Fig. 5-27.

5-5-13. C OUT Level Adjustment (VA-62 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) chroma signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV666
Specified value	300±15mVp-p

[Connection]

1) Terminate the chroma signal terminal of J650 (S VIDEO) at 75Ω.

[Adjustment Method]

1) Adjust the burst level to 300±15mVp-p with RV666.

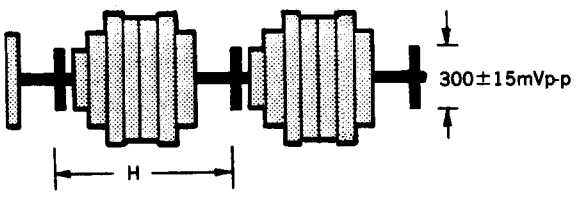


Fig. 5-28.

5-5-14. PB CCD Input Level Adjustment (VA-62 Board)

Mode	Playback
Signal	Alignment tape : Operation check (WR5-8CSE) color bar portion
Measurement point	IC650 pin ⑮
Measuring instrument	Oscilloscope
Adjustment element	RV655
Specified value	500±25mVp-p

[Adjustment Method]

1) Adjust to 500±25mVp-p with RV655.

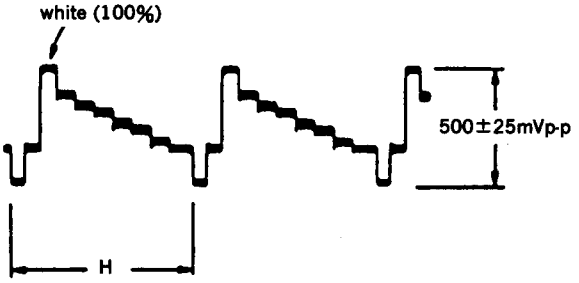


Fig. 5-29.

5-5-15. E Mode PB Y Level Adjustment (VA-62 Board)

Mode	Playback
Signal	Alignment tape for operation checking (WR5-8CSE) color bar portion
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV663
Specified value	1.020±0.025Vp-p

[Adjustment Method]

1) Adjust to 1.020±0.025Vp-p with RV663.

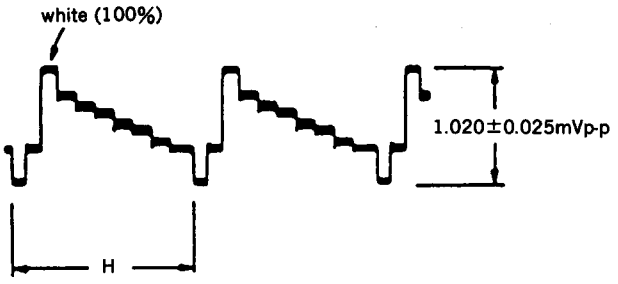


Fig. 5-30.

5-5-16. L Mode PB Y Level Adjustment (VA-62 Board)

Mode	Playback
Signal	Alignment tape for operation checking (WR5-5CSP or WR5-4CSP) color bar portion
Measurement point	J650 (VIDEO)
Measuring instrument	Oscilloscope
Adjustment element	RV417
Specified value	1.000±0.025Vp-p

Note 1 : Make this adjustment after completing E Mode PB Y Level Adjustment mentioned in 5-5-14.

[Adjustment Method]

1) Adjust to 1.000±0.025Vp-p with RV417.

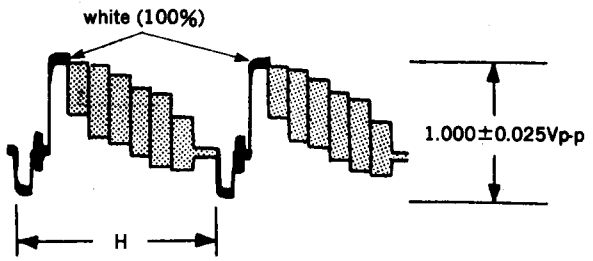


Fig. 5-31.

5-5-17. YD Adjustment (VA-62 Board)

Mode	Playback (PAUSE)
Signal	Alignment tape for operation checking color bar portion
Measurement point	Monitor TV display
Measuring instrument	
Adjustment element	RV416
Specified value	Flickering is not significantly visible.

[Adjustment Method]

1) Playback the signal.
2) Adjust RV416 so that flickering is not significantly visible on the PAUSE screen.

5-6. Digital Titler System Adjustment

[Adjustment Spequence]

1) Charactor Generator fo Adjustment
2) DDS Charactor Position Adjustment
3) AFC Adjustment
4) 4FSC Frequency Adjustment
5) Controler Frequency Adjustment
6) Tracking TH Adjustment

5-6-1. Character Generator fo Adjustment (SS-133 Board)

Mode	REC
Signal	Non-signal
Measurement point	IC102 pin ⑲
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	CT102
Specified value	15678±50Hz

[Adjustment Method]

1) Adjust to 15678±50Hz with CT102.

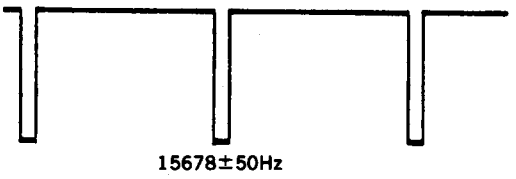


Fig. 5-32.

5-6-2. DDS Character Position Adjustment (SS-133 Board)

Mode	Playback (Data screen ON)
Signal	Color bar (used signal of TG-7)
Measurement point	Monitor TV display
Measuring instrument	Monitor TV
Adjustment element	CT101
Specified value	The inner line to the dividing line between red and blue.

[Adjustment Method]

1) Turn on the DATA SCREEN switch (FK-46 board S512).
2) Adjust the last inner line to the dividing line between red and blue with CT101. *(Refer to Fig. 5-33)*
3) Turn off the DATA SCREEN switch (FK-46 board S512).

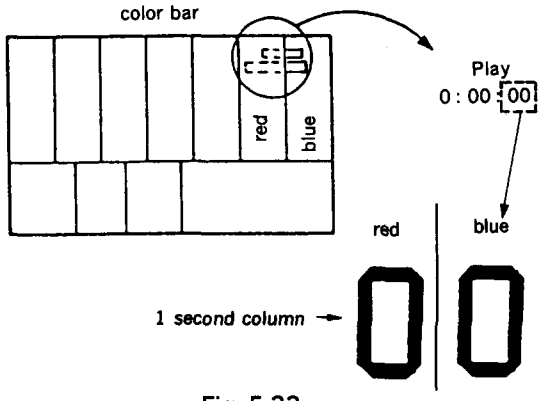


Fig. 5-33.

5-6-3. AFC Adjustment (SS-133 Board)

Mode	E-E
Signal	Monoscope
Measurement point	C122 ⊖ side
Measuring instrument	Digital voltmeter or Oscilloscope (DC lenge)
Adjustment element	RV100
Specified value	$2.6\pm0.1V_{dc}$

[Adjustment Method]

1) Adjust to $2.6\pm0.1V_{dc}$ with RV100.

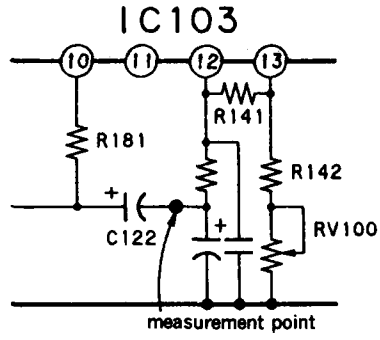


Fig. 5-34.

5-6-4. 4FSC Frequency Adjustment (FD-15P Board)

Mode	E-E
Signal	Non-signal
Measurement point	Q314 Emitter
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	CT302
Specified value	*4433619±50Hz*

[Adjustment Method]

1) Adjust to 4433619±50Hz with CT302.

5-6-5. Controller Frequency Adjustment (FD-15P Board)

Mode	E-E
Signal	Non-signal
Measurement point	IC301 pin ⑪
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	CT301
Specified value	9437±50kHz

[Adjustment Method]

1) Adjust to 9437±50kHz with CT301.

5-6-6. Tracking TH Adjustment (FD-15P Board)

Mode	E-E
Signal	Staircase (8 stairs)
Measurement point	CH 1 : CN201 pin ⑰ (Staircase input) CH 2 : IC303 pin ① (A/D select output)
Measuring instrument	Oscilloscope
Adjustment element	RV302
Specified value	Staircases to the second stair should be fetched and the third one should not be fetched.

[Adjustment Method]

1) Adjust to satisfy the specified value with RV302. (Refer to Fig. 5-35.

Note : In the case that ten staircases are used. the second stair should be fetched and the fourth one should not be fetched.

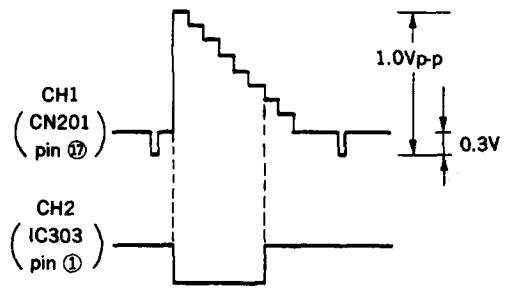


Fig. 5-35.

5-7. INDEX SYSTEM ADJUSTMENT

5-7-1. PB VCO Free Oscillation Frequency Adjustment (CC-33P Board)

Mode	Playback
Signal	Arbitrary tape
Measurement point	IC911 pin ⑧
Measuring instrument	Frequency counter
Adjustment element	RV910
Specified value	11.50±0.05MHz

[Connection]

1) Connect the IC911 pin ① (DUTY) and IC911 pin ⑥ (DVCC) with a jumper wire.
2) Connect the IC911 pin ⑳ (PB RF) and IC911 pin ⑨ (D GND) with jumper wire.

[Adjustment Method]

1) Adjust to 11.50±0.05MHz with RV910.
2) After adjustment, remove jumper wires.

5-8. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

Connect the audio system measuring instrument as shown in the following figure as well as the video system measuring instrument, and perform the adjustment at the 「Video」 position of the power switch.

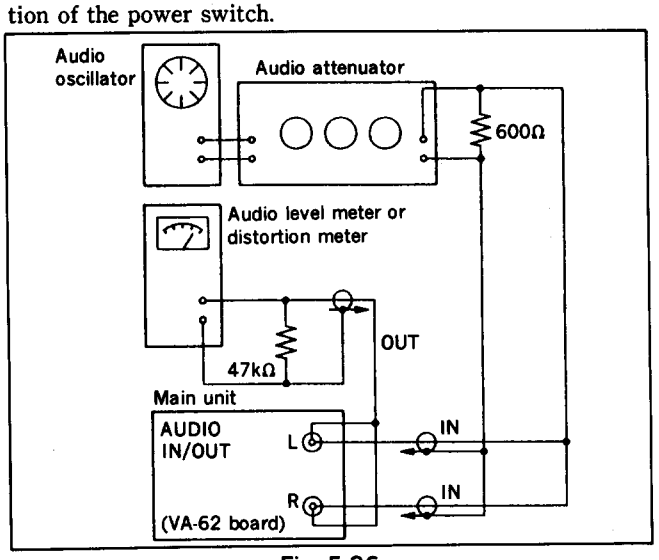


Fig. 5-36.

5-8-1. AFM Carrier Frequency Check (AU-60P Board)

Mode	Recording
Signal	Non-signal
Measurement point	L : HIC401 pin ㊽ R : HIC401 pin ㉝
Measuring instrument	Frequency counter
Specified value	L : 1.50±0.02MHz R : 1.70±0.02MHz

Note : Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Checking Method]

1) Turn off the output of the audio oscillator.
2) Check that the AFM carrier frequency in L : 1.50±0.01MHz and R : 1.70±0.02MHz.

5-8-2. REC AFM Carrier Level Check (VA-62 Board)

Mode	Recording
Signal	Non-signal
Measurement point	W401 pin ⑭ (REC AFM RF)
Measuring instrument	Oscilloscope
Specified value	80±7mVp-p

[Checking Method]

1) Confirm that the level is 80±7mVp-p.

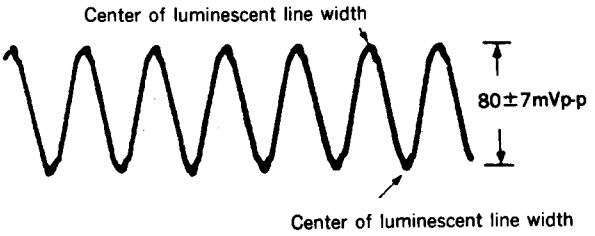


Fig. 5-37.

5-8-3. Playback Level Check

Mode	Playback
Signal	Alignment tape : Operation checking (WR5-5CSP)
Measurement point	Audio output L 〔R〕 terminal
Measuring instrument	Audio level meter
Specified value	−10±2dBs

[Checking Method]

1) Confirm that the audio output level is −10±2dBs.

5-8-4. E-E Output Level Check

Mode	Self-recoading and Playback
Signal	400Hz, −7.5dBs
Measurement point	Audio output L 〔R〕 terminal
Measuring instrument	Audio level meter
Specified value	−7.5±3dBs

[Checking Method]

1) Recoading signal.
2) Playback the recoding section.
3) Make sure that the audio output level is −7.5±3dBs.

5-8-5. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400Hz, −17.5dBs Ⓑ 30Hz, −17.5dBs Ⓒ 10Hz, −17.5dBs
Measurement point	Audio output L 〔R〕 termial
Measuring instrument	Audio level meter
Specified value	With the 400Hz playback output level as 0dB, the playback output level of 30Hz and 10kHz is 0±3dB

[Checking Method]

1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400Hz playback output level as 0dB, confirm that the playback output level of 30Hz and 10kHz is 0± 3dB.

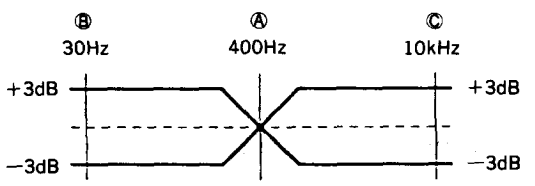


Fig. 5-38.

5-8-6. Overall Distortion Check

Mode	Self recording and playback
Signal	400Hz, −7.5dBs
Measurement point	Audio output L 〔R〕 terminal
Measuring instrument	Distorsion meter
Specified value	Less than 0.8%*1

[Checking Method]

1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.8%.*1

*1 Value when 200Hz to 3kHz BPF is used.

5-8-7. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal (Shorting plug is inserted into audio input jack)
Measurement point	Audio L 〔R〕 input terminal
Measuring instrument	Audio level meter
Specified value	Less than −62.5dBs*2

[Checking Method]

1) Record the signal
2) Playback the recorded section
3) Make sure that the noise level is less than −62.5dBs.*2

*2 Value when IHF-A hearing correction filter is used.

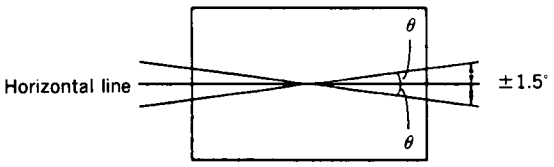
5-9. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE A) (VF-27P BOARD)

5-9-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 5-39

[Adjustment Method]

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of the CRT screen.
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)



Specified value : Image orientation within±1.5° of horizontal line.

Fig. 5-39.

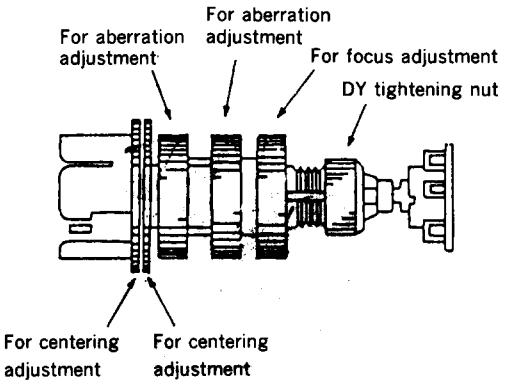


Fig. 5-40.

5-9-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 5-41.

[Adjustment Method]

1) Turn the centering adjustment rings to provide an image with even night, left, upper and lower margins. (See Fig. 5-40.)

Note : Since the centering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

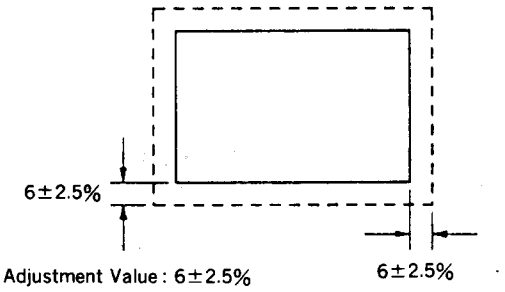


Fig. 5-41.

5-9-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion

[Adjustment Method]

1) Adjust for optimum focus using the focus ring. (See Fig. 5-40.)

5-9-4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified value	See Fig. 5-42.

[Adjustment Method]

1) Use the aberration adjustment rings to adjust any trailing dots to within 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the Centering Adjustment.

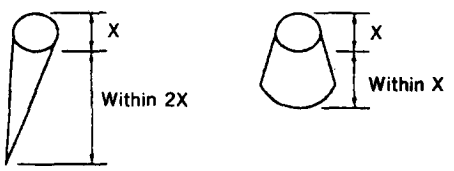


Fig. 5-42.

5-9-5. Horizontal Oscillation Frequency Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP)
Measurement point	CN904 pin ⑤
Measuring instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment element	RV901
Specified value	$2.60 \pm 0.05 V_{DC}$

[Adjustment Method]

1) Adjust to $2.60 \pm 0.05 V_{DC}$ using RV901.

5-9-6. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for cheking operation (WR5-5CSP) Monoscope portion
Adjustment element	C911
Specified value	$6.0 \pm 3.0\%$

[Adjustment Method]

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV902.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of $6.0 \pm 3.0\%$ (total of left and right). (See Fig. 5-44.)

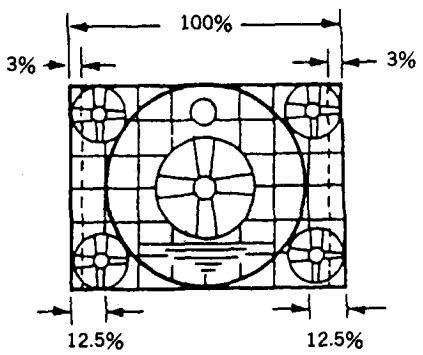
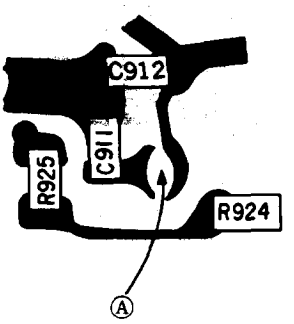


Fig. 5-43.



VF-27P Board
(conductor side)

A section	H size
Open	Large
Short	Small

Fig. 5-44.

5-9-7. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	RV902
Specified value	6.0±3.0%

[Adjustment Method]

1) By turning RV902, adjust vertical overscan to 6.0±3.0% (upper and lower total).

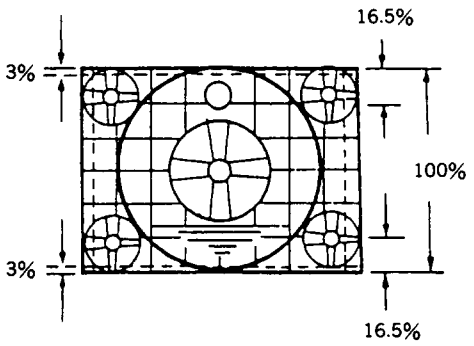


Fig. 5-45.

5-9-8. Brightness, Contrast Adjustments

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	Brightness: RV904 Contrast: RV903

[Adjustment Method]

1) Perform brightness and contrast adjustments alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

5-9-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

Values should conform to specifications given in 5-9-6. Horizontal Amplitude Adjustment and 5-9-7. Vertical Amplitude Adjustment. If not. readjust accordingly, and repeat 5-9-8. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 5-9-3. Focus Adjustment and 5-9-4. Aberration Adjustment.

5-10. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE B) (VF-26P BOARD)

5-10-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 5-47.

[Adjustment Method]

1) Adjust the volume array Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 5-48.)
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 5-46.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

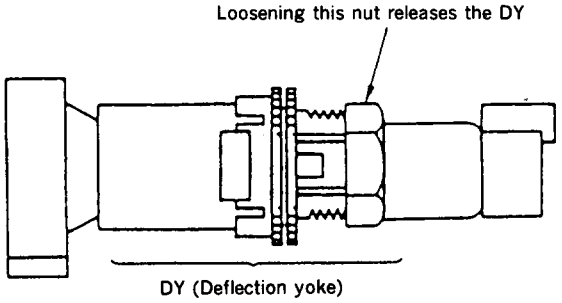
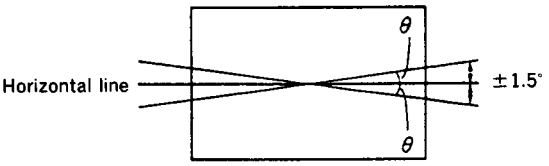
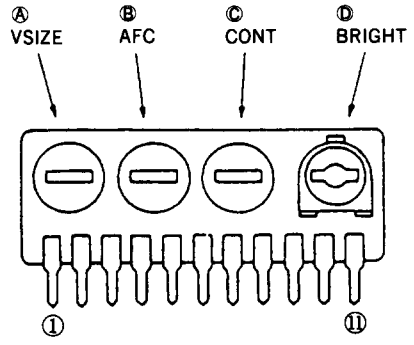


Fig. 5-46.



Specified value: Image orientation within±1.5° of horizontal line.

Fig. 5-47.



Volume array (CP901)

Fig. 5-48.

5-10-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 5-50.

[Adjustment Method]

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 5-49.)

Note: Since the cenering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

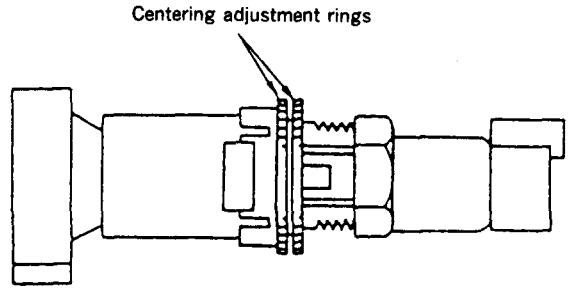


Fig. 5-49.

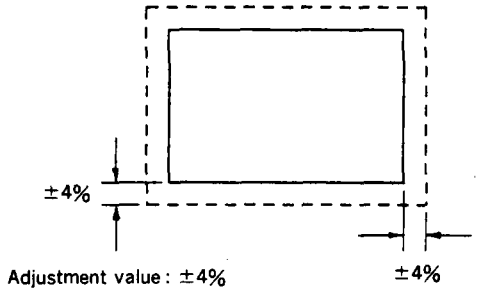


Fig. 5-50.

5-10-3. AFC Adjustment

Mode	E-E or Camera standby
Signal	Color bar
Measurement Point	C915 ⊕ side
Measuring instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment element	Volume array Ⓑ (AFC)
Specified value	$2.6 \pm 0.1 V_{DC}$

[Adjustment Method]

1) Adjust volume array Ⓑ (AFC) for $2.6 \pm 0.1 V_{DC}$. (See Fig. 5-48.)

5-10-4. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	C905
Specified value	6.0±3.0%

[Adjustment Method]

1) Line up the upper and lower section of monoscope image with the upper and lower edges of the screen by rotating volume array Ⓐ (V SIZE). (See Fig. 5-48.)
2) Rotate volume array Ⓓ (BRIGHT) to set the brightness to the normal level.
3) Short or open the pattern [A] of the H size adjustment capacitor (C905) to provide horizontal overscans of 6.0± 3.0% (total of left and right). (See Fig. 5-52.)

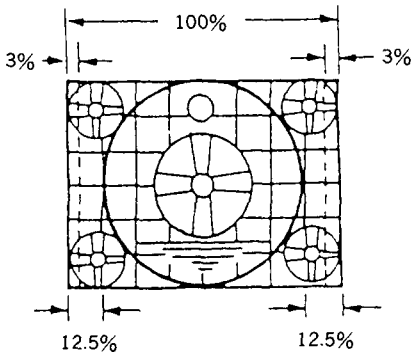
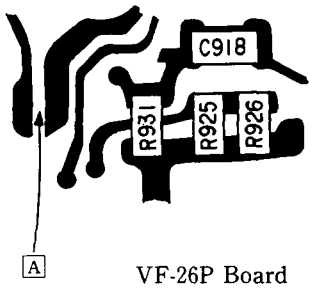


Fig. 5-51.



VF-26P Board
(conductor side)

A section	H size
Open	Large
Short	Small

Fig. 5-52.

5-10-5. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	Volume array Ⓐ (V SIZE)
Specified value	6.0±3.0%

[Adjustment Method]

1) By turning volume array Ⓐ (V SIZE), adjust vertical overscan to 6.0±3.0% (upper and lower total). (See Fig. 5-53.)

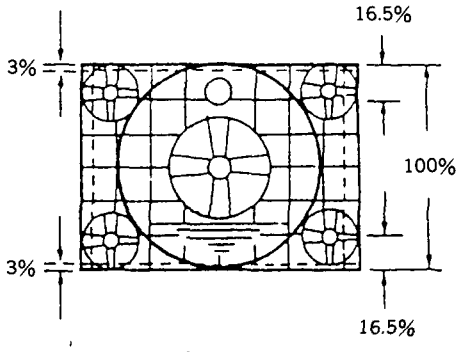


Fig. 5-53.

5-10-6. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	RV901

[Adjustment Method]

1) Adjust to the best focus point with RV901.

5-10-7. Brightness, Contrast Adjustments

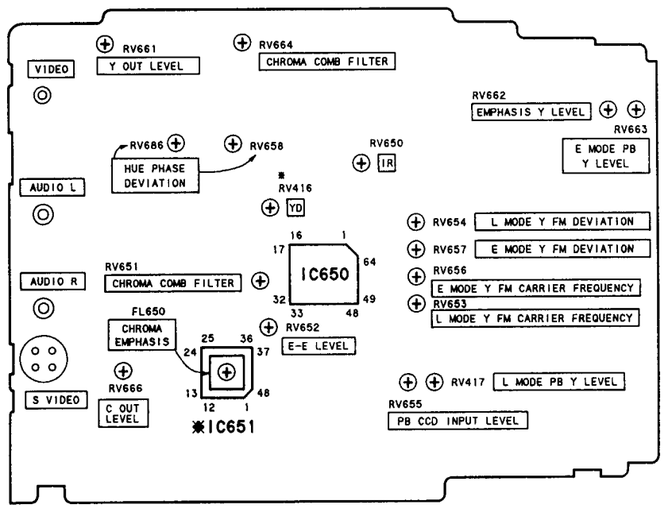
Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	Brightness: Volume array Ⓓ (BRIGHT) Contrast: Volume array © (CONT)

[Adjustment Method]

1) Adjust volume array Ⓓ (BRIGHT) and © (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest areas is possible.) (See Fig. 5-48.)

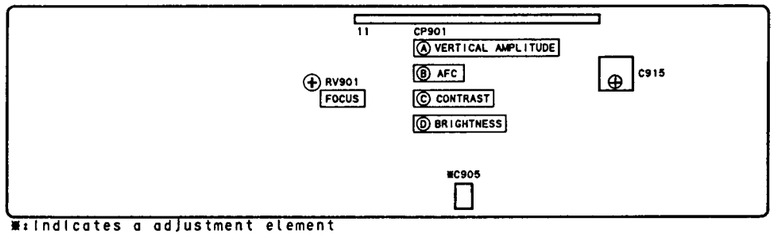
5-11. ADJUSTING PART LOCATION DIAGRAM

VA-62 BOARD (COMPONENT SIDE)



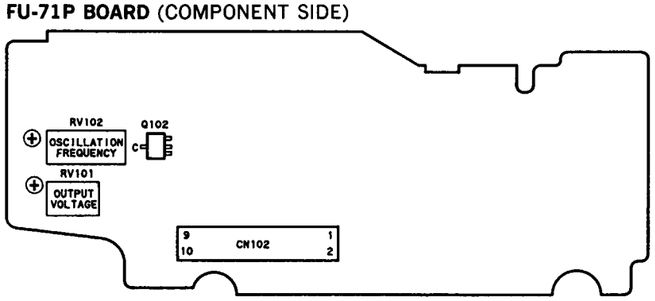
✱: Indicates a adjustment element mounted on the conductor side.

VF-26P BOARD (COMPONENT SIDE)

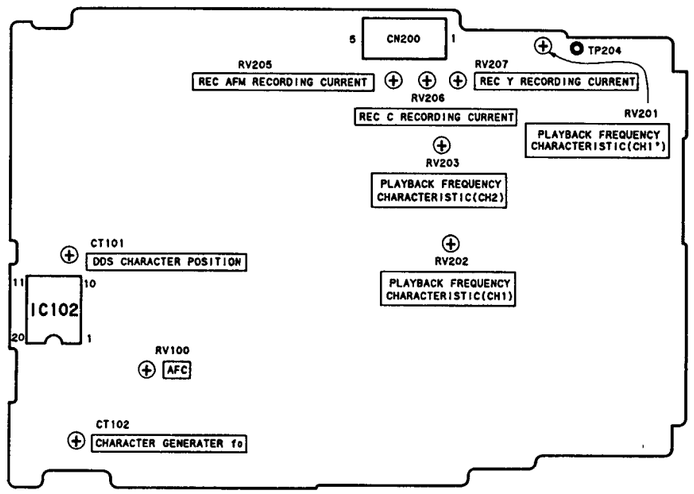


✱: Indicates a adjustment element mounted on the conductor side.

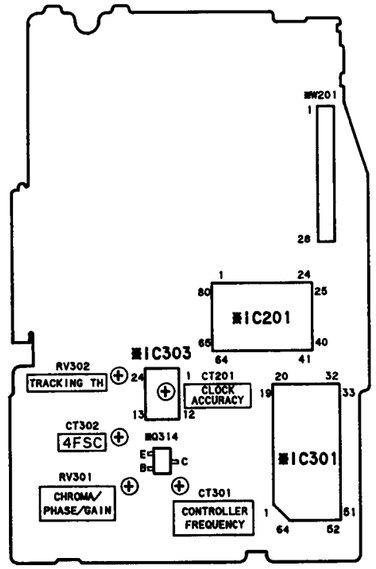
FU-71P BOARD (COMPONENT SIDE)



SS-133 BOARD (COMPONENT SIDE)

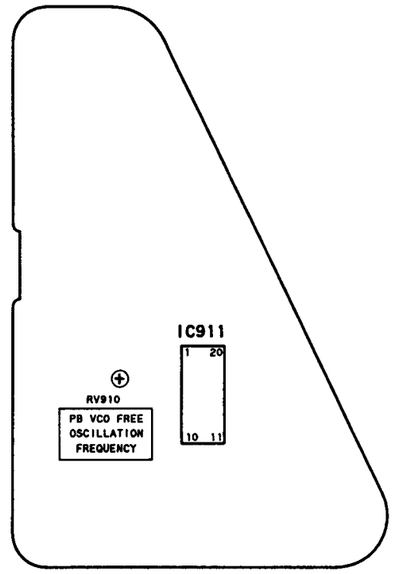


FD-15P BOARD (COMPONENT SIDE)

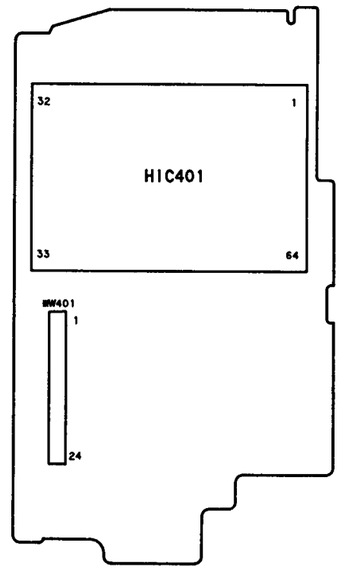


✱: Indicates a adjustment element mounted on the conductor side.

CC-33P BOARD
(COMPONENT SIDE)



AU-60P BOARD
(COMPONENT SIDE)



✱: Indicates a adjustment element mounted on the conductor side.

CCD-V700E
RMT-501

SONY®
SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

CORRECTION-2

Please correct your service manual.

☛ : **corrected portion**

PAGE	INCORRECT				CORRECT			
	Ref. No.	Part. No.	Description	Remark	Ref. No.	Part. No.	Description	Remark
162	9	＊A-7071-293-A	FK-46E BOARD, COMPLETE (E/AUS MODEL)		9 ☛	＊1-635-932-11	FK-46 BOARD ☛	

9-973-008-92

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CCD-V700E
RMT-501

SONY
SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

CORRECTION-1

This correction-1 correct because any mistakes.

☛ : **Corrected portion**

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B. V SUB Adjustment

Object	Not used
Measurement point	Checkpoint array pin (B4) (V SUB)
Measuring equipment	Digital voltmeter
Adjustment page	F
Adjustment address	12 (V SUB)
Specified value	(CCD imager specified voltage) ±3%

[Adjustment Method]

1) Set the adjustment page F and the adjustment address 12 with the adjustment remote control.
2) Change the adjustment data to be (CCD imager specified voltage) ±3% with the adjustment remote control.
3) Change the adjustment address to store the adjustment data.

4-3-7. HALL Adjustment (AF-54P Board) deletion

Object	All white chart All black (Put a black cap over lens)
Measurement point	CN801
Measuring instrument	AF μ COM data reader jig
Adjustment page	F
Adjustment address	1B (HALL GAIN) 1C (HALL OFFSET)
Specified value	1B : 03 1C : C or D

Change the fixed number of R1 from 10kΩ to 100kΩ in the AF microcomputer data reading jig. (If the number is kept to 10kΩ, the adjustment data can not change because of the difference of the impedance.)
When adjusting the old-model Handy Cam, 100kΩ is allowed to perform the adjustment.

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 05 with the adjustment remote controller.
3) Make all white chart in the color bar standard frame.
4) Set the adjustment address 1B and the adjustment data 20 with the adjustment remote controller. Set the adjustment address 1C and adjustment data 00.
5) Read this data of the AF microcomputer data reading jig. (Set this data as W_2 and input to the address 8B)
6) When this value is over F8, adjust the address 1C to F8± 03. Input this value of 1C to the address 87. When the value is below F8, set the data 00 of the address 87.
7) Set the adjustment address 1B and the adjustment data 00 with the adjustment remote controller.
8) Read this data of the AF microcomputer data reading jig. (Set this data as W_1 and input to the address 8A)
9) Cover the lens with black cap and make all black. (Open iris.)
10) Read this data of the AF microcomputer data reading jig. (Set this data as K_1 and input to the address 88)
11) Set the adjustment address 1B and the adjustment data 20 with the adjustment remote controller.
12) Read this data of the AF microcomputer data reading jig. (Set this data as K_2 and input to the address 89)
13) Obtain C by the following formula.

$$C=\frac{(C0+K_1-W_1)\times\triangle K+03+\triangle W}{\triangle K+\triangle W} \quad \begin{pmatrix}\triangle K=K_1-K_2\\ \triangle W=W_2-W_1\end{pmatrix}$$

14) Set the adjustment address 1B and the adjustment data 00 with the adjustment remote controller. Adjust the adjustment address 1C so that the data of the AF microcomputer data reading jig is D.
15) Set the adjustment address 1B with the adjustment remote controller. Change the adjustment data and set the data of the AF microcomputer data reading jig to 03.
16) Make all white chart in the color bar standard frame and read the data of this AF microcomputer reading jig. (Set this data as W_0 . When $W_0=C0\pm01$, the adjustment is completely performed. So set the adjustment data of the adjustment address EB to 00. When the above range is not satisfied, go to the following procedures.)
17) Obtain E by the following formula.

$$E=\frac{C0\times\triangle K+W_0\times\triangle W}{\triangle K+\triangle W} \quad \begin{pmatrix}\triangle K=K_1-K_2\\ \triangle W=W_2-W_1\end{pmatrix}$$

18) Set the adjustment address 1C with the adjustment remote controller. Change the adjustment data and set the data of the AF microcomputer data reading jig to E.
19) Set the adjustment address 1B with the adjustment remote controller. Chage the adjustment data and set the data of the AF microcomputer data reading jig to C0.
20) Cover the lens with black cap and make all black. (Open iris.)
21) Confirm that the data of the AF microcomputer data reading jig is 03±02.
22) Set the adjustment address EB and the adjustment data 00 with the adjustment remote controller.
23) Change the adjustment address in order to store the adjustment data.

4-3-7. HALL Adjustment (AF-54P Board) addition

Object	White pattern standard frame All black (Put the black cap on the lens.)
Measurement point	CN801
Measuring instrument	AF microcomputer data reading jig
Adjustment page	F
Adjustment address	1B (HALL GAIN) 1C (HALL OFFSET)
Specified value	White pattern imaging : C0±01 ALL black imaging : 03±02

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 05 with the adjustment remote control.
3) Set the adjustment page 1B with the adjustment remote control.
   Pick up the image of the all white pattern in the zoom position of the color bar standard frame, set the adjustment data C0±01.
   Put the black cap on the lens, select all black imaging, and set the adjustment data 03±02.
4) Set the adjustment page 1C with the adjustment remote control.
   Pick up the image of the all white pattern in the zoom position of the color bar standard frame, set the adjustment data C0±01.
   Put the black cap on the lens, select all black imaging, and set the adjustment data 03±02.
5) Repeat steps 2) and 3) until the specifications are satisfied.
6) Set the adjustment address EB and the adjustment data 00 with the adjustment remote control.
7) Change the adjustment address in order to store the adjustment data.

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(2) Auto White Balance Adjustment (VC-67P Board)

15) The below items, calculate by hexadecimal and input the adjustment data to each adjustment address.

$$D_{A6}=\frac{(D_{A1}-D_{A0})\times 40}{(D_{A3}-D_{A4})}$$

$$D_{A7}=\frac{(D_{A2}-D_{A1})\times 40}{(D_{A4}-D_{A5})}$$

$$D_{A8}=\frac{(5A-D_{A2})\times 40}{(D_{A5}-50)}$$

$$D_{A9}=\frac{(D_{A3}-D_{A4})\times 10}{(D_{A1}-D_{A0})}$$

$$D_{AA}=\frac{(D_{A4}-D_{A5})\times 10}{(D_{A2}-D_{A1})}$$

$$D_{AB}=\frac{(D_{A5}-50)\times 10}{(5A-D_{A1})}$$

$$D_{B0}=D_{A9}$$

$$D_{B8}=\frac{(D_{A1}+0A)\times D_{B0}+D_{A4}\times 10}{40}$$

$$D_{B9}=\frac{(D_{A1}-11)\times D_{B0}+D_{A4}\times 10}{40}$$

~~16) Select the adjustment address EE and input the adjsutment data F0.~~ deletion

~~17) Change the adjustment addresses 01 and 02 with the adjustment remote control to coincide the white bright point with the origin.~~ deletion

16) Select the adjustment address EE and enter the adjustment data 00.
17) Change the adjustment address in order to store the adjustment data.

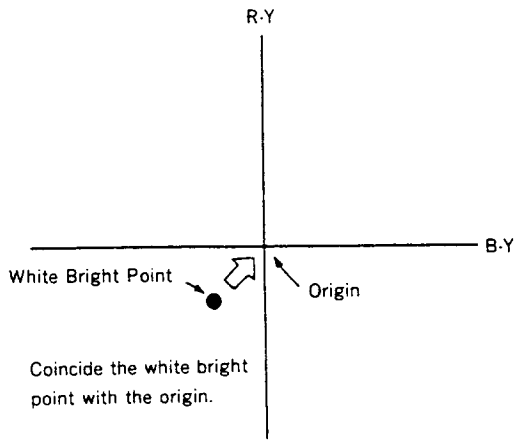

Fig. 4-34.